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NORTHERN COSTANOAN

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I have been concerned for some years with the study of a number of the native languages of California, and it has been my experience that the first question usually addressed to me about such study by non-linguists is, "To what other language or languages is such and such a language related?" The attitude revealed by this question, that what is solely, or at least primarily, worth knowing about the native speech is its genetic relationships, was however characteristic, until not very long ago, of those who themselves worked with these languages. It is reflected in the fact that these students, for the most part, limited themselves to the collection of shorter or longer vocabularies, from the comparisons among which rough approximations to gross relationships were made. As a result, all the information we have or are ever likely to have about many forms of native speech which have now become extinct consists of such word lists, more or less numerous, taken down by many different observers at many different—often uncertainly located—geographical points over a long period of time, in, perhaps, various orthographic traditions.

Such is the condition of our knowledge of Costanoan. This name is applied to a group of related dialects which we know to have been spoken, in the first half of the nineteenth century, along the coast (hence the name) and in the coastal valleys of north central California, over a reach extending about one hundred and fifty miles from a northernmost point at Carquinez Straits, at the head of the San Pablo Bay branch of San Francisco Bay, to a location in the Salinas valley about thirty or thirty five miles south of the city of Salinas. We do not have anything close to an adequate description of the native speech of any part of this area, which is now, so far as known, quite extinct. This is particularly unfortunate, because there are reports that the language survived in the Monterey region until about a dozen years ago; J. P. Harrington is said to have worked with one of the last speakers of the Mutsun speech of San Juan Bautista about 1929.[1] J. Alden Mason recorded and published a short word list from San Lorenzo, just south of the city of Oakland, in 1916;[2] and the late A. L. Kroeber collected short vocabularies and texts, which have been published,[3] in the first decade of the present century at both Monterey and Mission San Jose.

Kroeber (1910), in addition to his own collections from the last two places, republished all the Costanoan sources (the work of some 5 individuals) then known to him, except De la Cuesta's grammar and word book of Mutsun, which had appeared as vols. 4 and 8 of J. G. Shea's "Library of American Linguistics" in 1861 and 1862; this work of De la Cuesta's was analyzed

[1] Zephyrin Engelhardt, Mission San Juan Bautista, Santa Barbara, Calif., 1931, pp. 118–120.

[2] J. Alden Mason, The Mutsun Dialect of Costanoan Based on the Vocabulary of De la Cuesta, UCPAAE vol. 11, no. 7, 1961, pp. 470–472.

[3] A. L. Kroeber, The Languages of the Coast of California South of San Francisco, UCPAAE vol. 2, no. 2, 1904, pp. 69–80. id., The Churmash and Costanoan Languages, ibid. vol. 9, no. 2, 1910, pp. 239–263.

by Mason (1916). Since then R. F. Heizer has edited and published two more series of Costanoan vocabularies and phrase-lists, those of Alphonse Pinart,[4] collected in 1878, and of H. W. Henshaw,[5] collected in 1884 and 1888. The purpose of the present article is to add three hitherto unpublished word-lists to the Costanoan corpus, and, on the basis of this material and of that published by Heizer, to make some observations on Costanoan dialect divisions.

The first two of these vocabularies are particularly valuable because they reflect, however faultily, the speech of areas unrepresented in the records hitherto available. They are both from the pen of Father Felipe Arroyo de la Cuesta, and appear on pp. 19–21 of the same manuscript[6] which contains the Saclan material which I have already published in this journal.[7] The third, which was kindly brought to my attention by my colleague Mary R. Haas, is one of several vocabularies contained in a manuscript, numbered 1456, in the archives of the Bureau of American Ethnology, taken down by Jeremiah Curtin in November, 1884. The one here published is given as being in the language of Niles, California; as will be seen, the speech is practically identical with that already known at San Jose.

Karkin: Mariano Antonio Sackinecs me dio estas palabras, y voces, del Idioma, y Rancheria de Karkin en la [misión] de N[uestro] P[adre] dia 14 Enero de 1821, estando de Ministros los PP. Altimira, y Ordaz.

Numeros cardinales: nisthrjan *1*, othsjin *2*, capjan *3*, cathrahuas *4*, misuru *5*, tanipos *6*, kenetis *7*, othronacantumus *8*, talan *9*, tagthreithris *10*.

Admirado quedé oir aqui num[eros] como en el Mutsun de San Juan Bautista y dixe este es el principio de la Lengua de San Francisco, San José, Santa Clara, San Juan Bautista, San Carlos, y la Soledad hasta los Chalones de esta ultimos, pero tan variada en cada Mision que parece ser en cada una distinto idioma, y no lo es en realidad como cualquiero puede ver, y observar. Esta lengua comprende de 45 á 50 leguas de N[orte] á S[ur]. Tambien el Karkin, que significa Trocar se llama Sutsunu.

copopojoths vel konojoths *coronilla*, tacalaths *cabeza*, uthruruths *pelo*, tugtun *orejas*, oliths *frente*, tutper *cejas*, huinthras *pestañas*, gintehs *ojos*, usthres *nariz*, pugthrit *carrillos*, jeyeketh *barba*, juthruruths *barbas*, huehuelethrit *boca*, sittethrit *dientes*, carsan *muelas*, canac *yo*, memma *tu*, nuc *aquello*, manac *nosotros*, macamha *vosotros*, nucasmac *aquellos*, juyunaths *palo*, junathramuhue *hombre*, runathramuhue *muger*, jahuatamus *esposo*, jahuag *esposa*, jayu *ven*, othro *vete*, he *si*, ammi *no*, iracaths *piedra*, iranti *en piedra*, yaacojuyu *espera tu*.

Nota. Cuanto una Rancheria está mas proxima una de otra, tanto mas se parecen sus voces las mismas en una que en otra, y cuanto mas distan, mas discrepan; pero el mecanismo, ó la sintaxis se parece es el mismo. Por este es, que en todas estas supradichas Misiones el Idioma es *posposi-tivo*. Suppesit . . . ya está. Basta.

Juichun: Expresiones, y terminos que me dio en la Mision de N[uestro] P[adre] Celso Tolecse, que es de la Rancheria y Lengua *Juichun*, dia 14 Enero de 1821 con licencia de los PP José, y Blas.

Numeros cardinales: imen *1*, uthrin *2*, capjan *3*, cathroas *4*, misur *5*, sacken *6*, kenetis *7*, usatis *8*, tulan *9*, imen[?]gues *10*.

muthrel *cabeza*, uri *pelo*, chajasca *coronilla*, huinathskin *pestañas*, eyéc *barba*, uthrus *barbas*, us *nariz*, gin *ojos*, isu *mano*, tamas

[4] R. F. Heizer, ed., The Mission Indian Vocabularies of Alphonse Pinart, California Indian Linguistic Records, Anthropological Records 15:1, Berkeley and Los Angeles, 1952, pp. 7–35.

[5] id., The Mission Indian Vocabularies of H. W. Henshaw, ibid. 15:2, 1955, pp. 160–187.

[6] MS C-C, 63:2, Bancroft Library of the University of California.

[7] IJAL 21.201–209. (1955).

carrillo, tutper *cejas*, muhue *cuerpo*, caminguis *hombre*, aitaguis *muger*, si *agua*, umú *mar*, he *si*, acue *no*, tur *uña*, tapor *palo*, colmothra *arco* [~ cohuothra], yahua *aguarda*, ne *toma*, aiju *ven tu*, othro *vete*, sumi *dame*, irec *piedra*, oyosi irec*tac pon piedra en*, macug *marido*, jahua *esposa*, jiis vel giis *fuego*.

Nota. Ya estas palabras son mas parecidas al Mutsun de San Juan Bautista que las des Karkin, habiendo sido todas al principio unas mismas.

Niles: *man* tä′res, *woman* aitaks, *old man* hunta′tc, *old woman* kětenětc, *young man* kotco′, *young woman* aitaks, *boy* sinimatc, *head* mótel, *hair* uri′, *face* hĭ′nep, *forehead* tĭ′ma, *eye* hĭn, *ear* túksus, *nose* hus, *cheek* tä′mac, *beard* haiyek, *mouth* wĭpĕr, *tooth* sit, *tongue* läse′, *chin* hakúc, *neck* rûnai, *hand* ĭsú, *left hand* étcum isú, *palm of hand* tarka, *back of hand* tummer isu, *fingers* ishu ätka, *brain* urupa, *heart* minyi, *one* himĕ′n, *two* utĭ′n, *three* kapä′n, *four* kätwä′rj, *five* mĭsúr, *six* säkĕ′n, *seven* kenétis, *eight* osátis, *nine* telĕ′ktis, *ten* i′wis, *a cloud* mótoci, *sky* tarátak, *sun* hismĕ′n, *moon* kurme, *stars* usi′, *meteor* lûpkûn ósi, *fog* sitis, *water* si, *night* mur, *fire* hiis, *rain* ämä′n, *thunder* túra, *lightning* wi′lka, *wind* túye, *the ground* wû′rĕp, *dust* yuki, *mud* cĭ′kä, *sand* yuki kutsuimi, *rock* ĭ′rek, *salt* â′wĕs, *earthquake* yíne wĕ′rep.

I assume that the Karkin vocabulary reflects the speech of Indians who lived along Carquinez Straits, the "estrecho de las Karkines" of the Spaniards. It proves that these Indians were Costanoans, the northernmost representatives of the stock, and not Wintuns, as was once thought.[8] Some ten or twelve miles to the west of the mouth of the straits, along the steep southern shores of San Pablo bay and across a range of hills, lies a district known to the Spanish[9] as "la tierra de los Huchiunes." It is the territory situated between Pt. Pinole and Pt. San Pablo (once called the "point of the Huchiunes"), at the mouth of San Pablo Creek, where the present town of San Pablo is located. I equate Huchiun with Arroyo's Juichun. The area in which these two points lie has traditionally been assigned to the Costanoan Saclan; but the Saclan, who probably lived in an interior valley in the vicinity of the present towns of Walnut Creek and Lafayette[10] several miles south of the eastern end of Carquinez Straits, spoke a form of Miwok most nearly related to the northern Sierra dialect of that stock.[11] The map of tribal distributions in this whole region is badly in need of revision. Toward the south, the place nearest to Huchiun of whose Costanoan speech we have a record is San Lorenzo, about twenty five miles away across the level country along the eastern shore of San Francisco Bay now occupied by the cities of Richmond, Berkeley, and Oakland. Some fifteen miles farther is Niles, which is in the immediate vicinity of San Jose, the only mission founded by the Spanish in the East Bay region. The three vocabularies here published thus reflect the native speech of a stretch of country extending for about fifty miles along the entire eastern shore of San Francisco Bay, from its southernmost point to its northernmost.

To facilitate the understanding of the discussion which follows, a few remarks about the spellings of cited Costanoan forms will be appropriate. It is known that the phonemic inventory of the languages of this stock contained four stop consonants, which

[8] A. L. Kroeber, Handbook of the Indians of California, 1925, p. 356. id., Ethnographic Interpretations, UCPAAE 47.217. (1957).

[9] Cf. S. F. Cook, Colonial Expeditions to the Interior of California, Central Valley, 1800–1820. Anthropological Records 16:6, 1960. pp. 260–1. id., The Aboriginal Population of Alameda and Contra Costa Counties, California, ibid. 16:4, 1957. pp. 146–9.

[10] IJAL 25.67–68. (1959).

[11] IJAL 21.201–209. (1955).

may here be written p t ṭ k.[12] The third member of this list appears to have been a retroflex stop accompanied by more or less affrication. It is written by different observers in a large variety of ways, e.g. t, tc, č, s. Arroyo regularly writes thr, but also seems to use ths, t, s, and hs.

Some discussion is also required of a remarkable feature characterizing about one third of the entries in the Karkin list, a feature unique among all forms of Costanoan known to us. This list contains twenty one terms glossed with Spanish nouns; once we eliminate the four words (*man*, *woman*, *husband*, *wife*) with a personal reference, fourteen of the remaining seventeen appear provided with a suffix to which nothing corresponds in any other record of Costanoan. Only the terms for *ear* tugtun, *eyebrow* tutper, and *molar tooth* carsan, lack it, whereas the numeral for *10* also shows it. This suffix (or suffixes?) would appear to have had two shapes, -ṭ and -ṭiṭ: after stems ending in a stop the final vowel of the stem reappears before the suffix; after fricatives only -ṭiṭ is found, after vowels and stops both -ṭ and -ṭiṭ. To judge from the tenuous evidence of the single inflected form iranti *on the rock*, this suffix may have appeared only in citation forms.

jeyeketh*s* (i.e. heyek-e-ṭ) *chin*, cf. J.[13] eyec, SL. hēyek', N. haiyek, SJ. heyek, SCl. eyek-em.

iracath*s* (i.e. irak-a-ṭ) *stone*, cf. J. irec, SL. īrek', N. ĭ'rek, SJ. irek, SF. irek, SCl. irek, SCr. irek, SJB. irek, M. irek, S. i'-rĕk.

sittethrit (i.e. sit-i-ṭiṭ) *teeth*, cf. SL. sit, N. sit, SJ. sit, SF. sit, SCl. siit-em, SCr. sit, SJB. sit, M. siit, S. siit.

huinthras (i.e. win(a)ṭ-a-ṭ) *eyelashes*, cf. J. huinaths-kin, SCr. uinas, S. wi'-nas.

uthruruths *hair*, juthruruths *beard* (i.e. huṭu-r-u-ṭ), cf. M. uṭ *hair*, J. uthru-s *beard*.

usthres (i.e. hus-ṭiṭ) *nose*, cf. J. us, SL. xu·s, N. hus, SJ. hus, SF. us, SCl. us, SCr. hus, SJB. us, M. us, S. hus.

gintehs (i.e. xin-ṭiṭ) *eyes*, cf. J. gin, SL. hiñ, N. hĭn, M. xin, S. hin.

pugthrit (i.e. pux-ṭiṭ) *cheeks*, no cognates identified.

oliths (i.e. oli-ṭ) *forehead*, cf. M. uri *forehead*, S. urí *forehead*, SCr. uri *head*, SCl. uri *head*, *hair*, SF. uli *head*, *hair*, J. uri *hair*, SL. uri *hair*, SJ. uri *hair*.

tacalaths (i.e. takala-ṭ) *head*, cf. Huimen[14] tacala *hair*.

juyunaths (i.e. xuyu-na-ṭ) *tree*, cf. SCr. juya *tree*, S. huis *reed*, *sp.*, SF. huyah *tree*, *mountain*, SCl. uya *mountain*.

huehuelethrit (i.e. wewele-ṭiṭ, dissimilated from *welewele-?) *mouth*, cf. SJB. welewelmin *point of the lips*, Saclan huelehueli *lips*.

The only attempt with which I am familiar to discuss Costanoan dialect divisions is that of Kroeber.[15] This authority sets up dialect areas, one each centering at the Franciscan missions established at La Soledad, Carmel, San Juan Bautista, Santa Cruz, and San Francisco. He combines the region surrounding the two adjacent missions of Santa Clara and San Jose into a single dialect area; and the seventh, for which he had no data but called Saclan, was placed in northern Alameda and in Contra Costa counties. He recognized a major division separating the whole stock into a northern and a southern branch, the former consisting of the dialects at San Francisco, San Jose and Santa Clara, and Santa Cruz; and the latter of those at San Juan Bautista, Soledad, and Carmel.

Since Kroeber wrote much new material

[12] S. Broadbent, Rumsen I: Methods of Reconstitutions, IJAL 23.279. (1957).

[13] Costanoan dialect names are abbreviated as follows in this paper: K. (Karkin), J. (Juichun), SL. (San Lorenzo), N. (Niles), SJ. (San Jose), SF. (San Francisco), SCl. (Santa Clara), SCr. (Santa Cruz), SJB. (San Juan Bautista), M. Monterey), S. (Soledad).

[14] The unpublished Huimen vocabulary, also in the same MS which has the Saclan, Karkin, and Juichun lists, shows that language to have been practically identical with Coast Miwok; Karkin and Huimen can have been only a few miles from one another. See Kroeber, 1959, pp. 215–216.

[15] Kroeber, 1910, pp. 239–241. Kroeber, 1925, pp. 462–464.

has been made available, and parts of his scheme must now be revised. The major division into a northern and a southern branch will still stand; and it is still true, as Kroeber noted, that Santa Cruz will occasionally agree with the southern group, and, less frequently, that San Juan Bautista will coincide with the northern. Within the southern group, now that we have much more copious material on Soledad speech than the mere 22 words available to Kroeber, it may be confidently stated that San Juan Bautista and Soledad appear to be more closely related to each other than either one of them is to Carmel. The main concern of this paper, however, is with the northern areas, and no attempt will be made here to document the classification just asserted.

The position here taken will be that Karkin speech is sufficiently differentiated from all other forms of Costanoan that it must be regarded as constituting by itself a third major dialect group within the family, coordinate with the northern and southern branches now accepted. Although it agrees in some instances with other members of the northern group by contrast with the southern, the converse is true in other instances. A second thesis[16] here defended will be that we must recognize, within the northern group, a subdivision which may be called East Bay Costanoan, represented by the vocabularies from Juichun, San Lorenzo, Niles, and San Jose; the setting up of this subdivision, which does not include Santa Clara, involves the repudiation of an especially close relationship between San Jose and Santa Clara. The differences between the speech of these two places, which are not more than fifteen miles apart, are as great as those between Santa Clara and San Francisco on the one hand and Santa Cruz on the other.

The statements which follow are made with all reservations imposed by the paucity of the accessible evidence, and will be subject to revision in detail, when and if more material becomes known.

A major difference between Karkin forms and all others in the family, the appearance of a suffix -ṭ or -ṭiṭ attached to a preponderant majority of the non-personal nouns, has already been described and will not be further adverted to. This difference apart, the following Karkin forms may be regarded as general Costanoan, recurring in all or almost all dialects:

See above: sittethrit, usthres, gintehs, iracaths—only Karkin has /a/ in the second syllable.

othsjin (i.e. oṭxin, PC *uṭxi-) *two*, J. uthrin, N. utĭ'n, SJ. utsin, SCl. u-tca-hĭ'n, SCr. uthin, SJB. uṭxin, M. utis, S. utshe.

capjan (i.e. kapxan, PC *kapxa-) *three*, J. capjan, N. kapä'n, SJ caphan, SCl. ka-pa-han', SCr. kaphan, SJB. kapxan, M. kapes, S. kappxan.

jahuag (i.e. xawak, PC *xawa-) *wife*, J. jahua, SL. háuak, SF. hahwah, SCr. au-nan, SJB. xau-nan, M. xawan, S. haua.

he *yes*, J. he, SJ. he, SF. heah, SCl. exe, SJB. he, exe, M. e, S. i.

The following are instances of agreement between Karkin and the northern group:

cathrahuas (i.e. kaṭawaš) *four*, J. cathroas, N. kätwä'rj, SJ. katwac, SCl. katoac, SCr. kat-a-wác—SJB. ut·it, S. utcit, M. utitim.

misuru *five*, J. misur, N. mĭsúr, SJ. micur, SCl. mi-sul', SCr. micur—SJB. parwe, S. paruiš, M. hale-is.

kenetis *seven*, J. kenetis, N. kenétis, SCl. kenetc—SCr. tupuitak, SJB. t·akitci, S. utukca, M. utxomaicaken.

[16] Members of the second Spanish party to traverse the East Bay region, the Anza expedition of 1776, report a marked change of native speech when, having come south along the peninsula from the site of San Francisco and passed around the south end of the bay, they had begun to proceed northward. The following citations are from H. E. Bolton, Anza's California Expeditions, Berkeley, vol. III, 1930. "The Indians whom we saw along here are entirely different in language from those preceding." p. 264. "Likewise, their language is different from that on the other side of the southern estuary," p. 139.

jeyeketh *chin* (see above; the southern forms are: SCr. eyes, SJB. eyes, M. eis, S. sĕp′-pĕk).

In the following instances Karkin contrasts, in one way or another, with the other Costanoan dialects:

ammi *no*, J. acue, SL. akwet', SJ. akwe, SF. akwi, SCl. ek-we, SCr. u-ku-i, SJB. ekwe, M. kue, S. ĕk-wĕ′.

jahuatamus *husband* J. macug, SL. mák·o, SF. makko, SCl. mă-ko′, SCr. mako, SJB. mak·u, S. makku, M. há-wa-nŭnth.

tugtun *ears*, SL. TuKšuš, N. tuksus, SJ. tuksus, SF. tuksus, SCl. tukcuc, SJB. tuxsus, otco, SCr. oočo, M. tuxs, S. a′-tco.

nisthrjan *one*, J. imen, N. himĕ′n, SJ. himen, SCl. im-i-hĭn, SCr. ĭm-hĕn, SJB. hemetca, S. himitsa, M. imxala.

tanipos *six*, J. sacken, N. säkĕ′n, SJ. saken, SCl. caken, SCr. saken—SJB. nakitci, S. iminukca, M. hale-caken.

othronacantumus *eight* (= 2 × 4, or 2 + 6??), J. usatis, N. osátis, SCl. osatis, SCr. usatis—SJB. taitimin, S. taitemi, M. kapxamaišakken.

talan *nine*, J. tulan, N. telĕ′ktis, SCl. telektic, SCr. nu′-ku, SJB. paki, M. pak, S. watso.

tagthreithris *ten*, J. imengues, N. i′wis, SCl. i-wĕš, SCr. iueš—SJB. tansakte, M. tantsa, S. mat-su.

konojoths, *crown of the head*, J. chajasca, SCr. čaras, SJB. tapis.

tacalaths *head*, J. muthrel, SL. mōṭel, M. mótel, SJ. mot·il, SF. uli, SCl. u-li′, SCr. uri, SJB. moxel, M. ut·, S. tcop.

uthruruths *hair*, J. uri, SL. uri′, N. uri′, SJ. uri, SF. uli, SCl. uri, SCr. trop, SJB. uri, M. ut·, t·ap, S. worox.

oliths *forehead*, S. u-ri′, M. u′-ri; SL. Tim·ax, N. tĭ′ma, SJ. timax, SCl. timatc, SCr. tima, SJB. tima.

tutper *eyebrows*, J. tutper, SL. Ta·mas, SCr. Šunup, SCl. ar-lŏn, M. syimpur, S. wi′-nas.

pugthrit *cheeks*, J. tamas, M. tă′mac, SCl. eh'-tâ′-li, SCr. kačete, M. tamš, S. san′-tcŭk-i.

huehuelethrit *mouth*, SL. we′per, N. wĭpĕr, SJ. weper, SF. weper, SCl. weperem, SCr. weper—SJB. xai, S. hai, M. xai.

carsan *molar teeth*, SJB. karkas, raras.

juyunaths *tree*, *wood*, J. tapor, SL. Ta′por·, SJ. tapor, SCl. tapor, SCr. tapor *leña*, *firewood*, huia *trees*, M. mukiamk, S. muhuc.

runathramuhue *woman*, J. aitaguis, SL. aiTaKiš, SCr. surikma, SJB. mukurma, M. latciamk, S. curicme.

iranti *on the stone*, J. ire*ctac*, N. tarátak *sky* (*in the sky*?, cf. M. tcarax, SCr. tcara, SCl. tarax, SJB. tcarak, all = *sky*, and S. čorattika, M. tarakta, *id.*); Mason (1916) p. 410 gives -tka, -tak as a locative suffix in SJB; no evidence of a locative suffix -nti has been found elsewhere. Cf. perhaps N. ishu ätka *fingers* = *on the hand*, *attached to the hand*?

Some items in the above list, such as jahuatamus, tugtun, talan, uthruruths, huehuelethrit, juyunaths, and carsan, apparently share some of their formative elements with words in other dialects; but in each instance the Karkin word is in some way different from all its cognates.

Claim has been made above that there is evidence which will justify the recognition of an Eastbay subdivision within the northern branch, a subdivision comprising the dialects recorded at Juichun, San Lorenzo, Niles, and San Jose. Examples of this may be seen in the words for *head* and *woman*, just presented. Others are:

J. jiis, giis *fire*, SL. hiyis, N. hiis, SJ. hiyis—SF. roretaon, SCl. coto, SCr. ca-tau′, SJB. soton, M. coto, S. sâ-tan.

J. umú *sea*, SL. omu′W, SJ. muna (muna)—SCl. kale, ei′-lĕm, SCr. kalai, kal-len, M. kalin, SF. se ee.

N. kětenětc *old woman*, SL. Kaṭ^{e}netc', SJ. ketinetc—SCl. gi-ă-ho′-na, SCr. mukiukeniš, SJB. mukienin, M. lessexem, S. mukušma.

N. kotcó *young man*, SL. Kot·co, SJ. kotco—SCl. mĕk′-tca-i, SCr. kâ-trâk′-mĭn, SJB. kotcinsix, M. tin′-nŭmk-si′-umpk.

N. mótoci *cloud*, SL. makiš-mo′. To *it*

is cloudy, SJ. moto—SCr. piša, SCl. mut-te′, S. pĭs′-sa-tĕn, M. mĕtc.

N. sitis *fog*, SL. šĭ′·Tic—SCl. mul-te′, SCr. mičken, M. mačar, S. pĭ′-sa.

N. túye *wind*, SJ. t·uye—SF. tuyare, SCl. wasar, kana, SCr. taris, SJB. xiṭus, M. terx, S. ka′-wi.

It may be noted that San Francisco speech, wherever we have evidence of its terms for these items, differs in each instance: there was a different dialect on either side of the bay.

Finally, I shall allow myself some conjectures based upon the Karkin terms for *man* and *woman*, junathramuhue and runathramuhue. Here the segment -muwe is a word that recurs elsewhere in Costanoan in the meaning *person*: cf. SL. mue-Kma *people*, SJ. muwe-kma *id.*, N. Kariwis muekm̄a *Indians of San Jose*, J. muhue *body*, S. mue *person*. What precedes will be here analyzed xu-naṭa- and ru-naṭa- and compared with the corresponding terms in Esselen, an unrelated—Hokan—language spoken one hundred and fifty miles away from Carquinez Strait, along the upper reaches of the Carmel River and the Pacific Coast south of Pt. Sur. In that idiom[17] *man* is recorded by various observers as ĕ-hĭ′n-nutc, ĕ-he′-nutc-ĭ (Henshaw), ejenuths (Arroyo), and exenoc, xennoč (Pinart); and *woman* is given as ta′-notc (Henshaw), ta (Arroyo), and tannuč (Pinart). The occurrence elsewhere within the Esselen corpus of such forms as panna *son* and tapanna *daughter*, tapna *sister*, ĕ-hĭ-pa-na′-sis and xepna *boy* permits the isolation of the elements exe-, xe- *male* and ta- *female*, and so justifies such tentative reconstitutions as (e)xe-noče and ta-noč(e), possibly even (e)xe-noṭe and ta-noṭe. It seems to me that the statistical likelihood of such pairs of resemblant forms, found in a restricted geographical area, being the result of chance congruence is infinitesimal. If they are not, and since the languages involved belong to two distinct super-stocks, the resemblance is explainable only on the assumption of borrowing. Such a borrowing, given the distribution of the morphemes in the two languages, can have taken place in but one direction: from Esselen to Karkin. The fact that, on this assumption, Karkin r- corresponds to Esselen t- can only serve to confirm our conjecture: the phones are phonetically similar, but not identical.

In what historical frame could such a borrowing have occurred? To the north, the nearest—geographically and perhaps also linguistically—Hokan neighbors of the Esselen were the Pomo. Between the Pomo and the Esselen, at the time of discovery, were the Penutian Miwok and Costanoans. Now the bulk of the California Penutians had their habitat in the central valley and its neighboring mountains, and it has been supposed that their presence along the coast, from Bodega Bay to Pt. Sur, was a result of an intrusion from a center of diffusion in the delta region. The inhabitants displaced or submerged by such an immigration could have been Hokans, related to the historical Pomo and Esselen, and it is in the context of such contact that linguistic exchange is expectable. It is thus that I choose to conceive the occurrence of the particular exchange I am here considering; indeed, I can imagine no other likely explanation. Into the same context might also be fitted the correspondence between Coatanoan umú *sea*, examined above, and the Esselen i-mi′-la *id.* These borrowings thus afford us a glimpse into the distant pre-history of the San Francisco Bay area, at a time—possibly fifteen hundred years ago—when Central Valley Penutians, moving westward along the only water level route, encountered speakers of the Esselen-like language along the shores of the bay.

[17] Kroeber, 1904, pp. 49 ff. Cf. also Pinart, op. cit. p. 73.

A BIBLIOGRAPHICAL CHECKLIST OF CHIMAKUAN, KUTENAI, RITWAN, SALISHAN, AND WAKASHAN LINGUISTICS

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1. Bibliographical note
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1. A number of items such as prayers, hymns, and translations from the Bible, as well as some collections of songs and 'tales' (though not 'texts'), have not been cited in this Checklist. They are to be found listed in the second edition of G. P. Murdock's Ethnographic Bibliography of North America (New Haven, 1953) and/or in the Newberry Library's two volume Bibliographical Check List of North and Middle American Indian Linguistics in the Edward E. Ayer Collection (Chicago, 1941).

Since the publication of C. F. Voegelin and Z. S. Harris's Index to the Franz Boas Collection of Materials for American Linguistics (Language Monograph 22, LSA, 1945), the Library of the American Philosophical Society, which houses the Boas Collection, has acquired additional MSS; Morris Swadesh has reclassified the material, and the new Index, which has been revised by John Yegerlehner, is being incorporated in John F. Freeman's work-in-progress, a Guide to the Library's complete Indian MS collection.

Roman numerals after a title—e.g., AA, VII. 68–70 (1894)—indicate old series volume numbers; Arabic numerals—e.g., AA, 11. 13–26 (1909)—indicate new series.

2. Following is a list of abbreviations used:

AA American Anthropologist. Washington, New York, Lancaster, Menasha.

AAA-M Memoirs of the American Anthropological Association.

AAAS-P Proceedings of the American Association for the Advancement of Science. Philadelphia.

AAOJ American Antiquarian and Oriental Journal. Chicago.

AAS-P Publications of the American Antiquarian Society.

AMNH-M Memoirs of the American Museum of Natural History. New York.

APS-PT Proceedings (Transactions) of the American Philosophical Society. Philadelphia.

BAAS-R Report of the First (etc.) Meeting of the British Association for the Advancement of Science. London.

BAE-AR Annual Reports of the Bureau of American Ethnology. Washington.

BAE-B Bulletin of the Bureau of American Ethnology.

Boas Franz Boas Collection for American Indian Linguistics. Library of the American Philosophical Society. Philadelphia.

CNAE Contributions to North American Ethnology. Dept. of the Interior, U. S. Geographical and Geological Survey of the Rocky Mountain Region. Wash.

CU Columbia University Contributions to Anthropology. New York.

HCPIT Information Respecting the History, Condition and Prospects of the Indian Tribes of the U. S., ed. H. R. Schoolcraft. Philadelphia.

HAIL Handbook of American Indian Languages, ed. Franz Boas. New York, 1911, 1922, 1933–38.

IJAL International Journal of American Linguistics. New York, Baltimore.

JAF Journal of American Folklore. Boston, New York.

JAI Journal of the (Royal) Anthropological Institute of Great Britain and Ireland. London.

JSAP Journal de la Societe des Americanistes. Paris.

Lang. Language. Baltimore.

MKAW Mededeelingen der Koninklijke Akademie van Wetenschappe, Afdeeling Letterkunde. Amsterdam.

RSC-PT Proceedings and Transactions of the Royal Society of Canada.

SI-AR Annual Reports of the Board of Regents of the Smithsonian Institution.

SJA Southwest Journal of Anthropology. Albuquerque.

UCPAAE University of California Publications in American Archaeology and Ethnology. Berkeley.

USNM-R Reports of the U. S. National Museum. Washington.

UWPA University of Washington Publications in Anthropology. Seattle.

ZE Zeitschrift für Ethnologie. Berlin.

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TAOS IV: MORPHEMICS, SYNTAX, SEMOLOGY IN NOUNS AND IN PRONOMINAL REFERENCE

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4.0. Retrospect; theory
4.1. Morphemic statements
4.2. Syntactic statements
4.3. Semological statements
4.4. Metalinguistics; prospect

4.0. In Taos II: pronominal reference, IJAL 20.173–80 (1954), I discussed the categories of pronominal reference found in the noun and verb prefixes of Taos, presented the morph material of the person, number, and noun-class morphemes, and gave an analytical summary. That paper was essentially in the realm of morphemic analysis, with syntactic data and translations used only to delimit the frame of reference. Here I wish to extend the analysis by expressly stating the syntactic and semological functions of the morphemic material there set forth.

[Taos I: a language revisited, IJAL14.155–60 (1948), stated the phonological analysis I now use; some points need revision in the light of new data that I have acquired, but none of these data are directly pertinent to the present discussion, and they will be presented at another time. Taos) III: paralanguage, AL2:2.24–30 (Feb. 1960), deals with other matters. The section numbers of the three previous articles in this series should be thought of as preceded by the numbers 1, 2, 3 respectively and a decimal point—[1.], [2.], [3.]. In the present article this numbering system is put into effect by beginning with **4.0.**]

4.01. In my article Language, Encyclopædia Britannica 13.696–703 (1955), I discussed the structure of language under the headings 'Words and Grammatical forms', 'Sounds', 'Text', 'Meaning'. In Linguistics, Enc.Brit. 14.162A-H, 163 (1956), this statement was further refined (with reference back to the basic statements made in my Field of linguistics SILOP1, 1949) as follows: the 'meaning' is in metalinguistics; the physical and physiological base is in prelinguistics; linguistics proper (microlinguistics) consists of phonology, which examines the sounds, morphology, which examines the forms, and a third subdivision there called 'reference'. Morphology is divided into morphophonemics, morphemics, and syntax; 'reference' was not subdivided except as a diagram. Some time in the early 50s Robert P. Stockwell proposed the use of the term SEMOLOGY for the third subdivision of linguistics, coordinate with phonology and morphology as here used. (It is interesting to note that R. Noreen used this term, in very much the same way, more than half a century ago in Vårt Språk, Lund, 1905.)

Martin Joos, in Semology: a linguistic theory of meaning, SIL13.53–70 (1958), replaced the 'reference' mentioned above by the term SEMOLOGY, and proposed the three subdivisions 'collocation', 'notation', 'reference' under it. Joos also described the relation of the first of three subdivisions of this kind to the second—e.g., of articulations to phonetics, or of morphophonemics to morphemics, or of his 'collocation' to his 'notation'—as diacrisis. He also used this last term for the relation between the second or central subdivision and the third—phonetics and phonemics, morphemics and syntax, 'notation' and 'reference'. I hold this latter kind of relation to be somewhat different, and use another term here—RELATIONS.

4.02. The theoretical structure I am working with, then, can be summarized thus:

language, examined in [micro]linguistics, has as its SUBSTANCE the SHAPES of its words, examined under morphology; the DIACRITICS of the substance, the SOUNDS, are examined in phonology; the RELATIONS of the parts of the substance, the SENSE, are examined in semology. Each of the major subdivisions has itself a substance—respectively phonetics, morphemics, and Joos's 'collocation'; the relations of the substances are phonemics, syntax, and Joos's 'reference'. Under semology, I prefer the term SEMEMICS for the first or diacritic subdivision, the sememes being the diacritics of the substance, called by me OCCURRENCES, and the relations of the occurrences are the DISTRIBUTIONS. However, I have not yet worked out the realms of the subdivisions of semology to my full satisfaction. Language as a whole, it may be added, is regarded as the substance of macrolinguistics, the diacritics being in prelinguistics, and the relations in metalinguistics.

In the present paper I deal with the morphemic material set forth in Taos II, make syntactic statements about it, and then take the syntactic material up to semology, describing the sememes, and certain higher-order semological items (occurrences and/or distributions). In Taos II there were implied or expressed certain doubts and difficulties in the further analysis of the material. A considerable amount of new connected text was gathered by me in 1959, during field work conducted under a grant from the National Science Foundation (acknowledgement of this assistance is hereby made, the present paper being a partial product of that research). With fresh insights from the new material, and in the light of the boldly innovating analysis of an analogous system of pronominal reference made by Edith Crowell Trager in her The Kiowa language: a grammatical study (University of Pennsylvania dissertation 1960, dittoed, and available on microfilm), I was led to what I believe is a solution of the difficulties. The two languages are historically related, and the prefix-structures are segmentable in similar ways and show some actual historical correspondences. The Taos system is different in detail from the Kiowa one, and ends up looking much more like traditional person-and-number pronominal reference, but where it has to be analyzed differently the semological structure suggests analogies with that exhibited by Kiowa.

4.1. The morphemes with which we are concerned here are of several kinds: independent words, written with stress marks; first-position prefixes (at the beginning of a word), written *x*→; second-position prefixes (following the first-position ones), written ←*x*→; an infix, written ..*x*.. (the second-position prefix with which it occurs is written ←*x*..*x*→); third-position prefixes (before the stem), written ←*x*-; suffixes, written with preceding hyphen, -*x*. Each morpheme has a summarizing notation, indicated by √..., allomorphs are shown as $\sqrt[a]{}$... and separated by the alternation sign ∼, and a gloss, in italics, is added for the reader's convenience. The symbol (ą) is for a vowel that is lost under statable conditions, not pertinent here.

4.11. The independent words, all uninflected particles, are: √ną́ *I, we—speaker or speakers;* √'ę́ *you—addressee or addressees;* √'ą́wąn(ą) *he, she, they—other or others than speaker or addressee.* These are in one-to-one correspondence with the first-position prefixes in **4.12**; their form and their syntax are such, however (see **4.21**), that they and the prefixes are to be considered separate morphemes.

4.12. The first-position prefixes are: √1→: $\sqrt[a]{}$t→ ∼ $\sqrt[a]{}$ti→ ∼ $\sqrt[a]{}$k→ ∼ $\sqrt[a]{}$'→ *first person* [*agent or owner*—see **4.22**]; √2→: $\sqrt[a]{}$'→ ∼ $\sqrt[a]{}$k→ ∼ $\sqrt[a]{}$m→ *second person* [*agent or owner*]; √3→. √'→ *third person* [*agent or owner*]. For the allomorphic distribution with noun and verb stems and with other prefixes,

see Taos II. The details are not pertinent here.

4.13. The second-position prefixes are: √←Sg→: ᵃ∛←o→ ~ ᵃ∛←ąn(ą)→ ~ ᵃ∛←ą→ ~ ᵃ∛←Ø→ *singular* [*agent or owner*]; √←Du→: ᵃ∛←ą..n(ą)→ ~ √←ąn(ą)→ *dual* [*agent or owner*); √←Pl→: ᵃ∛←ą→ ~ ᵃ∛←i→ *plural* [*agent or owner*].

The one infix is ᵃ∛..pę.., and occurs only with √←Du→ as ᵃ∛←ą..n(ą)→, the actual form being /ąpęn/, and is an allomorph of √←B- in **4.14**.

4.14. The third-position prefixes are: √←B-: ᵃ∛←i- ~ ᵃ∛←pi- ~ ᵃ∛←m(ą)- *class B* [*as topic*—see **4.24**]; √←C-: ᵃ∛←u- ~ ᵃ∛←Ø- ~ ᵃ∛←w- *class C* [*as topic*]; √←L-: √←ną- *class L* [*as topic*] (see √←R-, below). If the first two of these are considered allomorphs in the same morphemes with the correspondingly glossed suffixes in **4.15**, then there is also √←A-: √←Ø- *class A* [*as topic*]; if these prefixes and those suffixes are to be considered as in separate morphemes (see **4.15**), then *A as topic* is an empty space in the pattern, a 'nothing' rather than a zero, and might be represented by ←□- (no morpheme sign, of course, since a morpheme cannot consist of nothing).

There is also a prefix √←R-. ᵃ∛←mo- ~ ᵃ∛←Ø- *reflexive* [*topic*], which occurs, with noun-stems, as a fourth-position prefix after √←B-, √←C-, and as third-position before √←L- and in place of 'A'; with verbs, √←R- is regular third-position, since there is no co-occurrence with the other classes.

4.15. The suffixes are: √-*A*: √-na, *class A* [*noun*]; √-*B*: ᵃ∛-ną ~ ᵃ∛-nemą, *class B* [*noun*]; √-*C*: √-ne, *class C* [*noun*]. The further treatment of these in syntax and semology leads me now to prefer to consider them as separate morphemes from the prefixes in **4.14**; consequently, under this treatment, there is no prefix for *A*.

4.16. In Taos II, [2.]53, there are some 'two-pronoun' verb prefixes that may be mentioned here. They are analyzed there as having four positions, 'subject, object, number of object, class of object'. The forms are not distinct), however, from other forms in the prefix system:

I, we	*...you 1*	'ą-	= 2SgR
	...you 2	mąpęn-	= 2DuB
	...you 3+		= 2DuB
	...you 3+	mąpi-	= 2PlB
	...me	'o-	= 1SgC
	...us 2	'ąn-	= 1Du[A], and 3Du[A], C and R
he, they			
	...us 3+	'i-	= 1 and 3Pl[A]
	...you 1	'ą-	= 2SgR
he, they	*...you 2*	mąn-	= 2Du[A] and R
	...you 3+	mą-	= 2Pl[A]

These forms make little sense when lined up as here, except that appropriate person and number references are found, but seemingly to the TOPIC, not the AGENT. The *ad hoc* morphemicization proposed in Taos II is mechanical, and should probably be withdrawn, as the forms are not overtly distinguished from others. If we do this, we must then leave treatment of these forms to higher levels—syntax and semology, where they will, possibly, be explainable in other than morphemic terms. See **4.26** and **4.36** for further discussion.

4.17. The morphemes discussed in **4.11**–**4.15** may be summarized thus:

The personal pronouns (morphemically particles) nąˀ, 'ęˀ, 'ąwąn(ą), which may be symbolized as ʷ√1, ʷ√2, ʷ√3, respectively.

The prefixes of person, in first position, symbolized as √1→, √2→, √3→.

The prefixes of number, in second position, symbolized as √←Sg→, √←Du→, √←P1→.

The prefixes of topic-class, in third position, symbolized as √←B-, √←C-, √←L-, √←R-; an infix in a second-position prefix exists, and is an allomorph of √←B-,

The suffixes of noun-class, symbolized as √-*A*, √-*B*, and √-*C*.

The several kinds of cross-correspondence among these morphemes come out of the syntax. The forms treated in **4.16** seem to require special statements—see **4.26**, **4.36**.

4.2. It is now necessary to consider the kinds of phrases in which the morphemes and words discussed in **4.1–4.16** occur. A phrase is defined for Taos as a binary unit consisting of a superfix having two stresses and a transition (or juncture) between them. One of the stresses is a primary /ˈ, ˆ, ˝/, and the other may be primary, medial—/ˋ, ¨, ˇ/, or weak /ˇ/ (usually unmarked). The transition is internal open—denoted by a space, internal close—/+/, or is normal transition, denoted by ‿ in syntactically explicit transcription. There is syntactic cross-reference between the two parts of a binary phrase, and each part may itself be a phrase; and there is also semological relation between the parts. Phrases are found to contain NOMINAL, VERBAL, or PARTICULAR items (words or phrases functioning like or which are nouns, verbs, or particles); the items finally are converted into NOMINOID, VERBOID, and PARTICULOID constituents.

In considering the syntax of the morphemic items discussed above, we examine the phrases they enter into, and the cross-reference between the parts of the phrase.

4.21. The words nąˈ, ˈę̃, ˈąwąn(ą) are morphemically particles, with no inflection of any kind.

They enter into phrases under medial stress or primary stress. The phrases containing them are different from other phrases in the language in their internal cross-reference, and these words are sorted out syntactically by this fact as PRONOMINALS. Then, by definition, they are said to be PRONOMINOIDS when bearing medial stress, and NOMINOIDS when having primary.

Whenever one of these three words is present, then, in a following word, usually the item that is the second part of the phrase beginning with the pronominal, there occur cross-referencing first-position prefixes. These are, respectively, √1→ with nąˈ, √2→ with ˈę̃, and √3→ with ˈąwąną. The three pronominals never occur as what can be called the 'incorporated object' (see **4.22**). In addition to this kind of cross-reference, there may also be cross-reference, in constructions that may be called appositive, to an A-noun that is paired semologically with a B-noun, or *vice versa* (see **4.25** and **4.35**); when this occurs, there is morphemic cross-reference somewhere to the noun as topic of class B, or there is the significant absence of such cross-reference which indicates that the topic is an A-noun.

4.22. The first-position prefixes (**4.12**) occur in words that are nominal or verbal, and in PHRASE-WORDS that are verbal. A phrase-word consists of a prefix-complex, followed in normal transition by a nominal, followed by plus-transition (possibly sometimes by normal transition—this has not yet been fully determined), after which comes a verbal. In these cases the nominal is the 'incorporated object' (see **4.24**), and the prefix-complex is always of the preverbal type. If we have a prenominal prefix-complex, then we are dealing not with a phrase-word, but with an ordinary phrase whose first constituent is a nominal with prefixes.

The first position prefixes in a nominal complex have cross reference to the PERSON of the OWNER. In a verbal complex they refer to the person of the AGENT. If there is further cross-reference to nouns or nominals, it is always to members of A-B pairs.

4.23. The second-position prefixes (**4.13**) occur in complexes with the first-position ones. They have cross-reference to the number of the item referred to by the first-position prefix; if the prefix is √←Sg→, the item in question is an A-noun. If the prefix is √←Du→ or √←Pl→, then the item is a B-noun. As before, the items are members of A-B pairs.

4.24. In the prefix-complex after the first- and second-position prefixes there is either an empty space ←␣-, or a third-position prefix (**4.14**). If ←␣- is found, this implies cross-reference to an A-noun. If √←B-, √←C-, or √←L- are found, the cross-reference is to nouns of those classes. The

cross-referenced noun is the TOPIC of the verb-action or of noun-ownership; in translation, the verb-action topic is often the 'object', the noun-ownership topic is the 'thing possessed.'

In verbal prefix-complexes, the third position refers to the nominal part of a phrase word, the 'incorporated object', or, if there is no such, to a noun elsewhere in the utterance in the CITATION construction; reference may also be to one of the pronominals.

In nominal prefix-complexes, the third position refers to the last noun of the phrase, the class of any nominal phrase ('compound') being always that of its last component (see **4.25**).

When the prefix √←R- occurs, the topic is the same as the agent or owner (*his own . . . , . . . himself*).

4.25. The suffixes (**4.15**) occur on nouns which, whether alone or the last components of nominal phrases, are syntactically nominals in citation construction. This construction has various equivalents in translation, being most often either 'subject' or some kind of 'object' (not 'incorporated'). As already stated, nominals are of the class of the last component in its citation form. Citation forms of nominals may appear with a prefix-complex (of the nominal type, denoting 'possession'), but this is rare, and is found, apparently, only with members of A-B pairs.

In general, citation forms show cross-reference from a prefix-complex elsewhere in the utterance, usually in the same phrase or clause (a clause being a complex of phrases with a single terminal contour). Nominals of class A are cross-referenced from prefix-complexes with ←□-; nominals of classes B, C, L are cross-referenced from prefix-complexes containing √←B-, √←C-, √←L- respectively; nominals of any class may be cross-referenced from √←R in a nominal complex, but only members of A-B pairs may be cross-referenced from √←R- in a verbal complex.

At this point, we can become explicit about the A-B pairs and other such combinations or their absence. It is found that some A-nouns occur such that elsewhere in the corpus the same stem occurs as a B-noun. Such an instance is an A-B pair morphemically. Other A-nouns are such that the same stem occurs as a C-noun; this is an A-C pair. Nouns that look like A-nouns also occur without either a B or a C partner; these are A non-paired. Then there are B-nouns such that there occur C nouns with the same stem; these are B-C pairs. C-nouns also occur as C non-paired.

A-B pairs are syntactically A,B and have all the cross-references of such A and B nouns indicated above: Sg agent or owner for A, Du or Pl agent or owner for B; topic for A or B.

A-C pairs are syntactically of two kinds—A,C and C. Both have cross-reference only from third-position prefixes. Those that are syntactically C show only C third-position cross-reference even when the occurring nominal is A. The two subclasses have different semology (see **4.35**).

A non-paired has cross-reference from third-position L only.

B-C pairs have cross-reference from B,C third position.

C non-paired has only C third-position cross-reference.

In addition to the several groupings of nominals just discussed, there exist the stems yų́- *this* (*here*) and yę́- *that* (*there*) which occur as A, B, and C. There are also the stems yîa- *that* (indefinitely placed) and wó- *that yonder*, which occur as B and C forms, and as yìati and wóti where one would expect A. These A-B-C or X-B-C triads show all the possible A, B, C, L, and R syntax, and are always in cross-reference to a nominal of the appropriate class. They are the DEMONSTRATIVES syntactically, and resemble the 'agreeing' adjectives of some languages in this part of their syntactic behavior.

4.26. As indicated in **4.16**, the verb-pre-

fixes translated as 'two-pronoun' forms are not distinct in external morphemic appearance. It was only by mechanical segmentation that they could be made to appear so, and it is now considered best to reject that procedure.

Syntactically, the eight different forms—2SgR, 2DuB, 2PlB; 1SgC, 1Du[A] (= 3Du [A], 3DuC, 3DuR), 1Pl[A] (= 3Pl[A]); 2Du[A] (= 2DuR), 2Pl[A]—are entirely regular when within the general prefix and cross-reference system. The first three and the last two exhibit cross-reference to 'ę̃ as agent (Sg, Du, Pl); except the first, they also refer to nominals of classes B or A as topic, and the first has R cross-reference as topic. The fourth, fifth, and sixth generally show cross-reference to nąą as agent, and to C or A as topic. The form 1DuA is homonymous with forms showing reference to 3 as agent, and to A, C, or R as topic; and 2DuA is homonymous with a form with R as topic.

But in addition to the regular cross-references just listed, we also find others. 2SgR, 2DuB, 2PlB occur with cross-reference to nąą, and the topic cross-references R and B seem to be associated with the number of the reference to 2, which is here taken as part of the topic reference, while nąą is the agent reference. In the three forms with 1, this again seems to be cross-reference to the topic, but the actual topic cross-references are C and A, which don't fit at all. In the last two forms the cross-reference to 2 again treats it as topic, but the R and A references don't fit the possible agent. In short, the syntactic reference of these forms does not jibe at all with the particular set of meanings given then as 'two-pronoun' forms, nor does their morphemic make-up account for the seeming syntactic reference except in a very peculiar and inverted fashion, and then only in part. It seems clear that these are cases where the morphemics and syntax can give no answer, and we must treat the 'two-pronoun' phenomena as something in semology—see **4.36**.

4.27. The syntactic cross-references discussed in **4.21–4.25** establish certain taxemes and tagmas, as we are calling the two kinds of units of syntax that seem to be required.

The taxemes ($\int_x$) are:

$\int_x$NA—class *A*
$\int_x$NB—class *B*
$\int_x$NC—class *C*
} nominals in citation construction;

$\int_x$B—
$\int_x$C—
$\int_x$L—
$\int_x$R—
} cross-reference to { class *B*, class *C*, class *L* } nominals as topic; topic same as agent or owner reference;

$\int_x$1—
$\int_x$2—
$\int_x$3—
} cross-reference to person (*1st*, *2d*, *3d*) of agent or owner, as personal pronoun or as nominal in citation;

$\int_x$Sg—
$\int_x$Du—
$\int_x$Pl—
} cross reference to number (*singular*, *dual*, 3+- *plural*) of agent or owner.

The taxemes $\int_x$NA, $\int_x$NB, $\int_x$NC form the tagma ($\int_g$) NOMINOID, symbolized as $\int_g$**N**.

The taxemes $\int_x$B, $\int_x$C, $\int_x$L, $\int_x$R form the tagma TOPIC, symbolized as $\int_g$**To**.

The taxemes $\int_x$1, $\int_x$2, $\int_x$3 form the tagma AGENT, symbolized as $\int_g$**Ag**.

The taxemes $\int_x$Sg, $\int_x$Du, $\int_x$Pl form the tagma NUMBER, symbolized as $\int_g$**Nu**.

The tagmas $\int_g$**N** and $\int_g$**Nu** combine to produce the tagmas SINGULAR NOMINOID, $\int_g$**N**S, DUAL NOMINOID, $\int_g$**N**D, and PLURAL NOMINOID, $\int_g$**N**P.

The nominal groupings A,B; A,C; B,C; and the single cross-reference A and C explained in **4.25**, also constitute tagmas: $\int_g$**A,B**, $\int_g$**A,C**, $\int_g$**B,C**, $\int_g$**L**, $\int_g$**C**. The groupings are established by the fact that if a stem may occur as a citation with either of two suffixes, then it occurs in phrase-words with either of the two corresponding third-position cross-references: tisə̀on + mṷ- *1Sg*□◡*man* + *see* = *I saw the man*, pisə̀on + mṷ *1SgB*◡*man* + *see* = *I saw the men*. $\int_g$**L** is established by the fact that stems of non-paired class A nouns occur in phrase-words with L cross-reference: tinąthə̀+mṷ *1SgL*◡*house* + *see* = *I saw the house or*

houses. $\S_g$**C** is established by the fact that stems of some A-C pairs and stems of non-paired C nouns occur only with C cross-reference 'ołùo+mų́ *1SgC* ⌣*arrow* + *see* = *I saw the arrow or arrows;* 'op'ǒ+mų́ *1SgC* ⌣*water* + *see* = *I saw the water.*

The triads cited in **4.25** establish the tagma DEMONSTRATIVE AGREEMENT, $\S_g$**ABC**.

4.3. It is now in order to take the various taxemes and tagmas established, and the morphemes, and to correlate them as occurrences of various kinds. From the correlation will be drawn the sememes and other semological items exhibited by this part of the language. Since, as stated, I have not satisfactorily subdivided semology as yet, and do not have a full terminology, I shall designate all semological items here, whether sememes or of higher order, by the symbol Σ (which may be read *sememe, etc.*) and enclose the following symbol for the item in single quotation marks—Σ'A', Σ'1', etc.

4.31. The words nąą́, '‚ę́ 'ąwąn(ą) and their cross-referencing taxemes give us the sememe of PERSON, Σ'Pe', covering the sememes of FIRST, SECOND, THIRD PERSONS—Σ'1', Σ'2', Σ'3'. These words also share in certain sememes of nominoids which will be mentioned shortly. Σ'1' and Σ'2' are never found in nominoids, but Σ'3' is implied in every nominoid.

4.32. When the first-position prefixes occur with the tagma $\S_g$**Ag** and the taxemes $\S_x$1, $\S_x$2, $\S_x$3, there is present the sememe Σ'Pe', in its three divisions respectively—Σ'1', Σ'2', Σ'3'. In this situation, Σ'Pe' is always accompanied by the sememes called forth by the presence of the second-position and third-position prefixes—see **4.33**, **4.34.**

4.33. The second-position prefixes, with the tagma $\S_g$**Nu** and the taxemes $\S_x$Sg, $\S_x$Du, $\S_x$Pl, imply the sememe of THREE-WAY NUMBER, Σ'Nu_3', with the subsememes Σ'Sg', Σ'Du', Σ'Pl'. These are always accompanied by Σ'Pe', and by the sememes called forth by the presence of third-position prefixes—see **4.34.**

4.34. The third-position prefixes, with the tagma $\S_g$**To**, and the taxemes $\S_x$B, $\S_x$C, $\S_x$L, imply the sememe of nominoid TYPE, Σ'Ty', with its subdivisions: Σ'B', SET nominoid; Σ'C', SYSTEM nominoid, and Σ'A(C)' ISOLATE NON-UNITIZABLE nominoid; Σ'A(L)' ISOLATE PLACE nominoid; the labels are chosen in terms of further semological units discussed below. The absence of a third-position prefix, ←⌶, is an instance of morphemic and syntactic absence implying a semological presence, the sememe Σ'A', ISOLATE nominoid. The $\S_x$R with $\S_g$**To** implies the sememe Σ'R' REFLEXIVE, i.e., topic of same type as agent.

4.35. The sememes Σ'A', Σ'B', Σ'C', are also called forth by the presence of the citation nominals with taxemes $\S_x$NA, $\S_x$NB, $\S_x$NC, and the tagma $\S_g$**N**. If a $\S_x$NA occurs with cross-reference from $\S_x$C or $\S_x$L, then the sememes are Σ'A(C)' and Σ'A(L)' respectively.

The correlation of Σ'A' or Σ'B' from citation occurrences with Σ'1', Σ'2', or Σ'3' results in the semological unit of a higher type Σ_2'Sb'—SUBJECT [or possessor]. The correlation of Σ'A', Σ'A(C)', Σ'A(L)', Σ'B', Σ'C', Σ'R' with topic occurrences results in Σ_2'Ob'—OBJECT [or possession]. When Σ'A' occurs in the presence of Σ'1', Σ'2', or Σ'3', we get Σ_2'Si'—SINGULATIVE. When Σ'B' and Σ'C' occur in the presence of Σ'Du' or Σ'Pl', each also in the presence of Σ'1', Σ'2', or Σ'3', we get Σ_2'÷Si' NON-SINGULATIVE.

The tagmas $\S_g$**A,B**, $\S_g$**A,C**, $\S_g$**B,C**, $\S_g$**L**, $\S_g$**C**, correlated with the various other tagmas and taxemes already taken into account as resulting in sememes (Σ) and higher units (Σ_2), result in still higher semological units Σ_3, as follows:

Σ_3'A-B' NUMBERABLE UNIT-AND-PATTERN:
A specified as Si in citation, and as Sb; as a unit as Ob. B specified as patterned ÷Si in citation, and as Sb; as a pattern as Ob.

Σ_3'A-C' NUMBERABLE UNIT-AND-COLLECTIVITY:
A specified as Si in citation; as a unit as Ob.

C specified as systemic ÷Si in citation; as a collectivity as Ob.

Σ_3'Ac-C' NUMBERABLE NON-UNITIZABLE-AND-COLLECTIVITY:
A specified as Si in citation; as a non-unitizable = collectivity as Ob; C specified as systemic ÷Si in citation; as a collectivity as Ob.

Σ_3'AL' NON-NUMBERABLE PLACE OF LOCALE:
specified as Si in citation, as a place or locale as Ob.

Σ_3'B-C' NUMBERABLE SET-AND-COLLECTIVITY:
B specified as patterned Si in citation; as a pattern as Ob.
C specified as systemic ÷Si in citation, as a collectivity as Ob.

Σ_3 '□C' COLLECTIVITY: specified as non-numberable system in citation, as a collectivity as Ob.

4.36. With the several kinds of semological items established in the preceding sections, some sort of sense can now be made of the two-pronoun forms discussed in **4.16** and **4.26.**

The forms 2SgR, 2DuB, 2PlB all translate with *you* as 'object.' The second-person reference is present in the first-position prefix, and is here to be interpreted as Σ'2'. The second-position prefixes give us the sememes Σ'Sg', Σ'Du', Σ'Pl', as always. It is the third-position prefixes that perhaps give the special semological twist, so to speak. With Sg we have R, so that the topic here fits with Σ'2'. With Du and Pl we have B, which fits with the B part of Σ_3'A-B' as Ob. When these forms are used in this way, the word ną́ is often present, and that furnishes the reference to Σ'1'. But it should be noted that in these forms even the semology is not sufficient when ną́ is absent; in that case it is only the situation that gives the meaning —i.e., this is a metalinguistic meaning (see **4.42**).

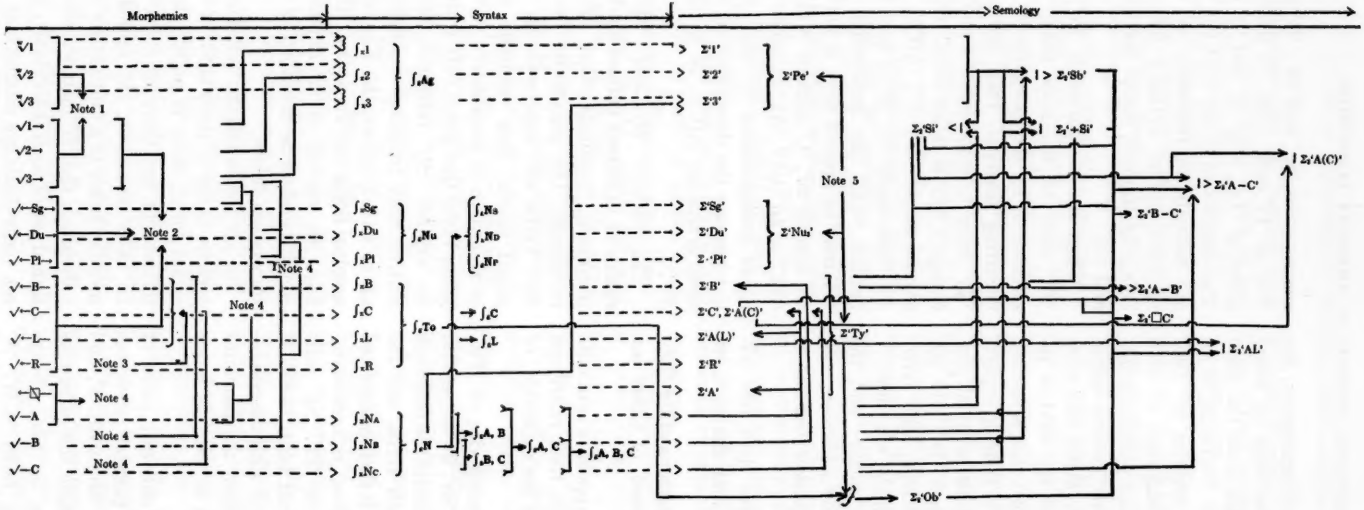
Similarly, the forms 1SgC, 1DuA, 1PlA have a morpheme in first position to call forth Σ'1', and one in second position for the appropriate number sememes. But Σ'1' and the number sememes refer, as in the previous case for Σ'2', to the topic. As for the third-position morphemes or their absence, in either case they are inappropriate to imply the Ob, for C is never otherwise connected with an Ob of Σ'A', which *me* would be, and A is never connected with an Ob of Σ'B', which *us* would be. Nor is there anything to correlate with any kind of third-person Sb. Once again this is a case of metalinguistic meaning deriving from the situation rather than from the microlinguistic occurrences.

The form for *he* ∼ *they . . . you 1* is the same as that for *I* ∼ *we . . . you 1*, so that we have here further evidence for situational meaning. The forms 2Du[A] ∼ R and 2Pl[A] have reference to Σ'2', and to the appropriate number, but again these must be construed as topic, and there are no appropriate forms to correlate with a third-person Sb.

The conclusion is that there are in Taos no 'two-pronoun' prefixes, and that there are no appropriate syntactic or semological devices for such meanings. Certain 'inappropriate' forms are used when such meanings are involved, but the latter result from the metalinguistic situation.

4.37. For convenience in summing up the correlated morphemic, syntactic and semological structures which have been discussed, we present the following table. All forms, etc., are referred to by the symbols previously used; the pronouns ną́, ’ę̄, ’ą́wąn(ą) are symbolized as $\sqrt[w]{1}$, $\sqrt[w]{2}$, $\sqrt[w]{3}$ (*words*). The symbol > may be read as *correlates with, implies.*

4.4. The various kinds of categories—morphemic, syntactic (two varieties), semological (three types), taken together provide the Taos language with the basis for its system of reference—metalinguistic meaning. The way in which the language applies these categories to the realities of the culture of the people speaking it may now be looked into. Since the semology here exposed is



Broken lines show direct correlation between the items on the same horizontal lines in the several columns.

Note 1. Items of of these two sets both occur in syntactic relation, tyey correspond one to-one.

Note 2. Items of these three sets always occur together, in the three prefix positions, except that third-position may be vacant.

Note 3. May occur after the items indicated.

Note 4. When the conoected items occur together, they correspond.

Note 5. Occur together.

necessarily preliminary and incomplete, the metalinguistic remarks that may be based on it are very sketchy. This is all the more true because there exists no beginning of an analysis of the various systems of Taos culture, other than the language, of such systematic nature as to make possible point-by-point comparison. Some general metalinguistic statements can be made, and some indication can be given of the kind of research—linguistic and other—that is needed.

4.41. The category of 'Pe' is made explicit by the presence of the three personal pronouns nąį, 'ę̃, 'ąwąną. When they are not further defined by other items, their references, determined situationally, are these:

nąį— the speaker; the speaker and the addressee; the speaker, the addressee, and one or more others; the speaker and one or more others.

'ę̃— the addressee, more than one addressee, the addressee(s) and one or more others.

'ąwąną— one or more persons other than the speaker or the addressee, of either sex and any age or status.

As soon as these words appear in syntactic structures with other items, their references are made more precise, or are expanded, or are otherwise delimited.

The presence of the categories of 'Pe', 'Nu$_3$', 'Si', or '÷Si', and 'Sb', in the several possible combinations, delimits the reference to the actor or actors with verbs, and the possessor with nouns. 'Pe' is then categorized as '1', '2', or '3', and 'Nu$_3$' is necessarily indicated as 'Sg', 'Du', or 'Pl'. 'Sg' calls forth 'Si', 'Du' and 'Pl' call forth '÷Si'. If the personal pronouns occur with the combinations just mentioned, then the pronouns are limited and defined as to 'Nu$_3$' in terms of their basic references.

The pronoun 'ąwąną, and any noun or nominal, give the several possible references to 'Nu$_3$', 'Si', '÷Sg' and 'Sb', with '3', and also imply or explicitly state the categories 'A' and 'B'. These two, as 'Sb', always imply each other, calling forth 'A-B'. 'A' accompanies 'Sg' and 'Si'; 'B' accompanies 'Du' or 'Pl' and '÷Sg'. Of the several categories of 'Ty', only 'A' and 'B' can be 'Sb'. This enables us to say that the 'A-B' nouns are animate in reference; all such nouns recorded by me actually refer to human beings or animals, except the words for *sun* and *doll*.

When the categories of 'Pe', 'Nu$_3$', and 'Sb' refer to nominals other than those referred to by the categories of 'Ty' in the occurring material, then the categories of 'Ty' refer to some other nominal, and the category 'Ob' is called forth. 'Ob' may be of several kinds: 'B', 'C', 'A(C)', 'A(L)', 'A'. All these imply '3'. 'B', if part of an 'A-B', implies '÷Si' (an implication of 'Du' or 'Pl' may be present too). If part of a 'B-C', 'B' implies 'Si'. 'C' implies '÷Si' if part of a 'B-C' or an 'A-C'. 'AL' excludes the possibility of distinguishing 'Si' and '÷S' as 'Ob', but permits the distinction in citation; the same is true for 'A(C)'. 'A' as 'Ob' is always 'Si'.

The various 'Sb' and 'Ob' references enable us to delimit various kinds of nominal references. Nominals other than 'A-B' are inanimate. The inanimates never occur as 'Sb'. Verbs with expressed 'Sb' can then be called active; they translate into English as transitive or intransitive verbs with subjects. Verbs that occur only with '3' 'Sg' and no explicit 'Sb' reference can be called stative; they translate as English impersonals or as adjectives, the English subject or nominal being the Taos 'Ob'. All Taos verbs have an explicit or an implied 'Ob', and could therefore be described as transitive in translation terms.

In all the nominals, reference is always present to one of three kinds of what may be called form: there is unity, there are patterned sets, and there are collective systems. In 'A-B' nominals, the animates, the 'A' member refers to a unit person or animal, an individual; the 'B' member refers to a patterned set of such individuals; as a unit or a set, individuals are numberable.

In 'A-C' nominals, the 'A' member is a unit, but is not an individual but is one member of a collectivity or system. The 'C' member refers to the collectivity. They are numberable. The reference of 'A-C' nominals is to material objects, natural and artifactual. It is interesting to note that the category of '÷Si' in these nominals accompanies a collectivity, not a patterned set of individuals as is the case with 'A-B' nominals.

In 'Ac-C' nominals, the 'Ac' member is a non-unitizable part of a collectivity; it can be numbered, as *one*, but it cannot be a unitized 'Ob'; only a collective 'C' 'Ob' is possible. 'Ac-C' nominals refer to material objects also, but the 'Si' member, though citable as *one*, is never a unit 'Ob': the word for *arrow* is an example of this class; referentially, in Taos, one does not make or see or shoot AN arrow, one makes or sees or shoots the class arrows.

'AL' nominals are non-numberable, and they refer always to place or locale. There seem to be instances of the same stem occurring as 'A-C' and as 'AL', with different 'Ob' congruence, of course. This needs further investigation. Words like *house*, *town*, *lake* are in the 'AL' class, understandably enough. The category is not limited to native terms, but also occurs in loans: komòlto'óna *bed(stead)*, from Spanish cama alta (New Mexican Spanish /kamálta/), is an 'AL' nominal. The implications of the place-reference seem to be to a circumscribed, a defined, a bounded place.

'B-C' nominals have the 'B' member referring to a patterned set that is unitizable and which is a member of a collectivity of such sets. Typical examples are the words for *eye*, *head*, *hand*, *foot*, *mountain*, *flower*, *cedar log* (a phrase), *box*, words for trees, *jaw*, *chief's cane of office*, *fork*. In each case the artifact or object is a complex of several parts, a patterned set. The referential analysis of these nominals would be a very interesting way to get at some aspects of the Taos world view.

The nominals of the '□C' class refer to non-numberable systems or collectivities. They often turn out to be homonymous with 'C' members of 'A-C' nominals. The reference-difference is quite clear, however. An example of such homonymity is the word for *river* or *water* as a substance (also 'A-C' as *drop of water* and *a quantity of water*). Most '□C' nominals are translatable as abstracts, collectives, or verbal nouns: *sweetness*, *act of opening*, *thinking*, *dancing*, *language* (=*speaking*).

4.42. The forms presented in **4.16** and further discussed in **4.26** and **4.36** show a different kind of reference from the nominals discussed in the preceding section. There the situations deal with the material universe in which the speakers of the language operate.

In the 'two-pronoun' forms the reference is to interpersonal interaction. Here the language has actual microlinguistic material to suggest only part of the reference, and the precision of meaning comes entirely out of situations.

There is evidence in my texts that where a translation would involve a so-called indirect object, Taos uses the pronominal reference forms discussed in this paper, with 'Ob' semology, and that the indirect-object meaning again comes wholly out of the situation. I have not analyzed these situations, preferring to deal with the microlinguistic material first.

4.43. This paper has analyzed a small corpus of forms on all the possible microlinguistic levels, and has indicated what kind of metalinguistic statements may be attempted on this basis. It has also pointed up several avenues for further research that should prove fruitful.

The nominals of Taos need to be examined situationally, so that their syntax and semology may be further delineated. Then it would be possible to begin their subclassification in terms of different kinds of reference meanings. To carry such a project beyond its initial steps would require an extensive analysis, beginning with the morphemic structure, of the verbals of the

language. I have not made exhaustive studies of verbal forms beyond the matter of prefixes, so that nearly all remains to be done here. Needed are analyses of the syntax of the many verbal forms with postbases and suffixes. When such analyses are available, it will be possible to make semological studies of the verbals. Then, by integrating the nominal and verbal semological categories, a beginning can be made on the problems of referential meaning, and the language-based metalinguistic conclusions will begin to emerge.

All along, attention must also be paid to paralanguage. Some of the situational meanings alluded to above may very well be accompanied by special paralanguage. Paralinguistic studies of the material I gathered in 1959 are in progress.

Finally, it must be pointed out that studies of Taos non-linguistic culture need to be carried far beyond the limits of the few ethnographical accounts that exist. And the social-anthropological or sociological studies should be made with constant awareness and recording of the accompanying language. With present-day recording equipment, the anthropologist who is not a linguist need never use his linguistic non-expertness as an excuse for neglecting the language. He can collect the language for someone else to analyze. Only that way can metalinguistic studies be carried beyond the limits of the language material itself.

SENECA MORPHOLOGY VII: IRREGULARITIES AND VARIANTS*

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26. Irregularities
27. Colloquial style
28. Idiolect variants

26.1. Sometimes morpheme sequences are found that do not fit any pattern described thus far. It is characteristic of these sequences that they occur with and include only a relatively limited number of particular root morphemes, whereas the sequences already described occur with a much wider selection of roots. In that sense the patterns discussed in this section are irregular.

26.2. There are a few instances of compound verb roots composed of two verb roots in sequence: ʔotɛ:teʔ *it's standing still in the air* (-tɛ- *fly*, -te- *be in place*); honɔtkeníhsaʔɔh *they (masc.) are holding a meeting* (-kɛny- [**3.11**] *hold a contest*, -ihsáʔ- *finish, complete*, and -at- *reflexive*). Occasionally a verb base expanded in a regular way occurs in positions regularly occupied by a single verb root morpheme only: -asyɔny- *clothe* (-ash[æ]- *clothing* [?] and -ɔny- *make* [**14**]) in kotyaʔtasyɔnyaʔtáhkɔh *she has clothed her body*; -atatɔ- *trade, exchange* (-atat- *reciprocal* and -ɔ- *give* [**15**]) in ʔoʔthɛnɔhnóhsata:tɔʔ *they traded houses*.

26.3. The causative I (**13.7**) or instrumental (**13.11**) morpheme sometimes occurs in the position regularly occupied by the nominalizer (**12.2**): -ʹʔt- in ʔojíkwɛʔtaʔ *venereal disease* (-jikwɛ- *have venereal disease*); -ʹht- in kaʔséhtaʔ *wagon* (-ʹʔse- *haul*); -ʹhkw- in ʔohsóhkwaʔ *paint* as a noun (-ahso- *paint* as a verb). Note the structure described at the beginning of **14.2** in hasyóɛʔtaji:nɔh *he's strongly masculine* (-syóɛ- *be reckless* with causative I, and -jinɔ- *be male*).

26.4. A noun suffix (**7.5**), rather than an aspect suffix, sometimes occurs after a verb base: -ʹʔ *simple noun suffix* in kanyotaiyoʔ *Handsome Lake*, the Seneca prophet (-iyo- *be beautiful* with incorporated noun root -nyota- *lake*); -ʹʔkéh *external locative* in waɔnɪʔkeh *railroad track* (-ɔni- *make* with -á- *road*); -ʹ:néh *external locative* in kaʔsehtowáne:neh *on the train* (-owanɛ- *be big* with -ʹʔséht- *wagon* [**26.3**]). Sometimes in cases of this type the noun suffix has an irregular allomorph (one not listed in **7.6**): simple noun suffix -ʔ in kaksokɛ:yɔ:ʔ *Grinding Dishes*, a dance (-kɛyɔ- *shell, peel* with -ks- *dish*); external locative -kéh in hohso:tkeh *where his grandparents are* (-ʹhsot- *be grandparent to*); external locative -ʹhkéh in ʔotɛ:nisyóʔktahkeh *at the end of the day* (-óʔkt- *come to the end* with -é:nísh[æ]- [**14.4**] *day*).

26.5. Occasionally a noun is found with one of the prefixes described in **21–25**. Note the occurrence of the negative prefix teʔ- (**23**) in teʔkakæ:ʔ *not a story* (cf. kaka:aʔ [**5.4**] *story*); and of the partitive prefix ni- (**25.2**) in niyóiwaʔ (*some aspect*) *of the matter* (cf. ʔóiwaʔ *matter*), niyokæ:ʔ *how much the price* (-ka[æ]- *price*), niyó:waʔkeh *at which time* (-ʹ[h/:]w- *specific time*).

26.6. Besides the elliptical forms mentioned in **15.6**, some other noun stems occur without the neuter pronominal prefix, either consistently (like kiskwi:s *pig*) or in stylistic alternation with the regular form: stówæʔko:wa:h *Great Feather Dance* (alternating with ʔostówæʔko:wa:h). In the latter case, i.e. where there is an alternation, the elliptical form may be assignable to the colloquial style described in **27**. Words whose full form would begin with y[ɔ]- *feminine* (**6.7**) have elliptical forms beginning with ʔɔ-: ʔɔthɔwi:sas, name of a women's ritual dance (alternating with yɔthɔwi:sas).

* Seneca Morphology I, II, III, IV, V, VI, IJAL 26. 11-22, 123-29, 224-33, 283-89; 27.42-45, 114-18.

26.7. While the paragraphs above have dealt with the irregular occurrence of morphemes already introduced in previous sections, this and the following paragraph deal with morphemes not previously described. One is a unique pronominal prefix, ji-, which occurs only in some animal names: jinóhtaiyɔ:ʔ *mouse* (lit. *rummager, meddler*), jikóhsahsɛʔ *wildcat* (lit. *fat face*), jinóhsanɔh *cricket* (lit. *it watches over the house*), jisha:ɔt *oriole* (lit. *halter on it*).

26.8. There is one morpheme, -kwah *toward, in the direction of*, which may be regarded as an ENCLITIC. While it seems not to be an independent word by the definition in **2.10**, it is irrelevant in the identification of final and prefinal vowels in the preceding word (**4.5–7**); i.e., the vowel which precedes it behaves as if it were final so far as the determination of length is concerned. Furthermore, the preceding vowel always has strong stress, and if this vowel is immediately followed by final *h* when the enclitic is not present, the *h* is replaced by length. Examples are swa:tí:kwa:h *toward the other side* (cf. swa:tih *on the other side*); tyone:nó?kwa:h *toward the south* (cf. tyone:nɔ? *the south*, lit. *where it is warm*).

26.9. Finally, a number of verb roots which denote kinship relationships occur with special shapes or meanings of the pronominal prefixes. A detailed discussion of these irregularities will be found in section 1a of the Glossary in my Handbook of the Seneca Language.[1]

27.1. Some of the words that have been described up to this point contrast with other words that are partially alike in form and identical in meaning except for a connotation of colloquialness or informality. These latter words will be said to belong to the COLLOQUIAL STYLE, and to contrast with words belonging to the FORMAL STYLE. The two styles differ in the following ways.

27.2. Formal words that contain e preceded by a consonant and followed by a vowel contrast with colloquial words that contain no e, but instead have length after the following vowel: formal teoskɛ́:ʔwɛh/ colloquial to:skɛ́:ʔwɛh *his mouth is open*; formal héenɔhsatases/colloquial hé:nɔhsatases *he goes around the house*.

27.3. Formal words that contain i preceded by a consonant and followed by a vowel contrast with colloquial words that contain y in place of the i and length after the following vowel: formal nioya?táwɛ?ɔh/ colloquial nyo:ya?táwɛ?ɔh *how it has happened to him*; formal thíaya?ta:tɛ?/colloquial thyá:ya?ta:tɛ? *he's a different man*.

27.4. Formal words that contain the vowel sequence oɔ contrast with colloquial words that contain ɔ: instead: formal ?óɔya?ɛ:?/ colloquial ?ɔ́:ya?ɛ:? *the color of the sky, blue*.

27.5. Formal words that begin with the negative allomorphs tɛ?- or tɛ- (**23**) contrast with colloquial words in which the place of the e in this allomorph is taken by a vowel identical with whatever vowel occurs next in the word: formal tɛ?akonóhtɔ?/colloquial ta?akonóhtɔ? *she doesn't know it*; formal tɛ?ɔkwɛnóhtɔ?/colloquial tɔ?ɔkwɛnóhtɔ? *we (pl.) don't know it*.

27.6. Formal words that contain the sequences khni and khny contrast with colloquial words that contain ki and ky respectively instead: formal khni?tyɔ?/colloquial ki?tyɔ? *they (nonmasc. du.) dwell*; formal ?akhnyato:wæ:s/colloquial ?akyato:wæ:s *we (excl. du.) hunt*; formal khnyaktɔs/colloquial kyaktɔs *they (nonmasc. du.) return*.

27.7. Formal words that contain the sequences hni and hny in which the h is an allomorph of the inclusive person morpheme contrast with colloquial words that contain ti and ty respectively instead: formal hni?tyɔ?/colloquial ti?tyɔ? *we (incl. du.) dwell*; formal nɔ?téhnyatɛ?/colloquial nɔ?tetyatɛ? *between us (incl. du.)*; formal hnyaktɔs/colloquial tyaktɔs *we (incl. du.) return*.

27.8. Formal words that contain the sequences hni and hny in which the h is an allomorph of the masculine morpheme con-

[1] New York State Museum Bulletin (Albany, in press).

trast with colloquial words that contain hi and (h/:)y respectively instead: formal hni?tyɔ?/colloquial hi?tyɔ? *they (masc. du). dwell*; formal nɔ?téhnyate?/colloquial nɔ?-té:yate? *between them (masc. du.)*; formal hnyaktɔs/colloquial yaktɔs (**3.7**) *they (masc. du.) return.*

27.9. Formal words that contain the coincident allomorphs tsi-/ts-/tsa?- (**25.3**) contrast with colloquial words that contain shi-/sh-/sha?- instead: formal tsa?wátahkwi?/colloquial sha?wátahkwi? *when it was finished*; formal tsa?téyo?tɛ:h/colloquial sha?-téyo?tɛ:h *it's of the same kind.*

27.10. Formal words that contain length within a vowel cluster contrast with colloquial words in which the length is absent: formal hoka:ot/colloquial hokaot *he's telling stories*; formal hawé:eyɔ:h/colloquial hawé:yɔ:h (**3.19**) *he's dead.*

28.1. There are other variants which can be associated, not with a particular style within the speech of one individual, but with one or another particular speaker. Some differences of this type can undoubtedly be assigned to geographically conditioned dialect variation. There are lexical items, usually denoting recent cultural innovations, which are clearly in this category: waɔní?keh *railroad track*, lit. *where the road is made* (**26.4**) (Tonawanda Reservation); kɛ:wé:-tehta:? *railroad track*, lit. *wire laid out flat* (Cattaraugus and Allegany Reservations). Having worked in depth with only a few speakers on each reservation, however, I have found it in most cases impossible to distinguish local differences from individual differences in the same locality. With a larger sampling from each area, a profitable study of this question could be made. A few examples of individual variation follow. While a particular speaker commonly uses one variant in his own speech, he is usually, although not always, aware of the other variant and may occasionally use it (cf. the two pronunciations of the word *route* in English).

28.2. The phoneme sequence ǽ:ɔ varies with both ǽ:ɛ and é:ɛ. An example is contained in the word nikatakǽ:ɔh *it's thin* (-takaǽ- *be thin* with -ɔ́h *descriptive*), which has the variants nikatakǽ:ɛh and nikataké:ɛh.

28.3. The indicative prefix followed by the first person objective prefix sometimes occur as ?o?wak- rather than ?ɔk- (**10.10**): ?ɔkyɛ:ɛh/?o?wakyɛ:ɛh *it hurt me.*

28.4. There is a noun stem -ɔhwɔ́? which occurs with the objective prefix (**10.5, 10.8**) and is translatable as an emphatic personal pronoun: haɔhwɔ? *he himself*, kaɔhwɔ? *she herself*, honɔ:hwɔ? *they (masc.) themselves.* In some idiolects these words are rather ha:hɔ?, ka:hɔ?, and honɔ:hɔ?. The first two of these variants have prefixes which seem to be anomalous, since they are those which regularly occur only before roots beginning with o or ɔ.

28.5. Examples of particular words which have variant forms are: ?awé?ɔhsa?/?awǽ?-ɔhsa? *sunflower* (the prefix in the second form again anomalous; **10.8**), and yɔwɔ:-ktha?/yɛwɔ:ktha? *sifter, sieve* (**13.7**).

HISHKARYANA (CARIB) SYNTAX STRUCTURE: II*

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2. Phrase
3. Sentence

2. The phrase is defined as a sequence or potential sequence of two or more words which function as a unit. The term 'potential sequence' refers to group (i) phrases, which have as nucleus a minimum of one obligatory tagmeme, such as phrase head; the term 'sequence' to group (ii) phrases, which have as nucleus a minimum of two tagmemes, such as focus and orienter. Both of these groups have satellite optional tagmemes of two types: phrase margin 1, manifested by one or more (usually only one) postpositional modifier attributives; and phrase margin 2, manifested by one or more (frequently a sequence of two or three) modal particles. The phrase fills a slot at sentence level (most commonly), within another phrase structure, or within a word. Phrase types are grouped together into hyperclasses in the same way as words, according to external distribution and internal structuring. The primary division follows closely that of word hyperclasses: verb phrase, noun phrase, attributive phrase, locative phrase, and time phrase. There are also: possession phrase hyperclass, quantitative phrase, ideophone phrase, and vocative phrase.

2.1. The verb phrase hyperclass consists of ten classes of verb phrases, which parallel the ten classes of verbs. Each of these verb phrases manifests the predicate tagmeme in each of the first ten sentence types respectively; thus, the intransitive declarative verb phrase (Vx.1) manifests the tagmeme +Intr.Dec.Pr. in the intransitive declarative sentence. All verb phrases are group (i) types, having obligatory nucleus tagmeme, verb phrase head, and optional satellite tagmemes, verb phrase margin 1 and verb phrase margin 2. The internal structure of Vx.1, which is representative of all other verb phrase types, is shown in the following formula: +Vx1H ±Vx.Mg.1 ±Vx.Mg.2. The obligatory tagmeme, verb phrase 1 head (+Vx1H), occurs in phrase initial and is manifested by the intransitive declarative verb class. The optional tagmeme, verb phrase margin 1 (±Vx.Mg.1), occurs immediately following the verb phrase head and is manifested by the post-positional modifier attributive class. The optional tagmeme, verb phrase margin 2 (±Vx.Mg.2), occurs in phrase final and is manifested by one or more (up to four have been found to occur in sequence) members of the modal particle class.

Examples of verb phrases are: Vx.1: nasanïmye [Vx1H] *it raised itself up*; nïnïkye - hatï [Vx1H - Vx.Mg.2] *he slept - it is said*; oyonmahyacowï - komo - hamï [Vx1H - Vx.Mg.1 - Vx.Mg.2] *you all pass the day - collective - evidently* (*you all live together evidently*); Vx.2: kasawnukye - šarha [Vx2H - Vx.Mg.2] *I went up river - again*; toye - ymo - mak ha [Vx2H - Vx.Mg.1 - Vx.Mg.2] *it went - the big and bad one - but*; Vx.3: weñakonï [Vx3H] *I saw it*; keheřamteno - komo [Vx3H - Vx.Mg.1] *he may make us sick - collective*; nakïhtoye - šarha tï [Vx3H - Vx.Mg.2] *he made it - also, it is said*; wakñohye - ymo - ha ka [Vx3H - Vx.Mg.1 - Vx.Mg.2] *I burned it - the big and bad one - right then*; Vx.4: kacownï [Vx4H] *they said it*; kekonï - hatï [Vx4H - Vx.Mg.2] *he said it - it is said*; Vx.5: manace - ymo [Vx5H - Vx.Mg.1] *you all are - big ones*; nehš ackonï - šarha [Vx5H - Vx.Mg.2] *they all were - also*; Vx.6: ownïhko [Vx6H] *sleep*; ahakak - ha [Vx6H - Vx.Mg.2] *wake up*; Vx.7: tok ha [Vx7H - Vx.Mg.2] *go*;

* For part I see IJAL 27.125–142 (1961).

Vx.8: yohtoko [Vx8H] *make it sharp*; erehta - ha ka [Vx8H - Vx.Mg.2] *go scare it - right now*; Vx.9: kasko [Vx9H] *say it*; Vx.10: ehco.ko [Vx10H] *everybody be*.

2.2. The noun phrase hyperclass consists of nine classes of noun phrases. The first four classes are group (i) types and parallel the four classes of nouns; they have obligatory nucleus tagmeme, noun phrase head, and optional satellite tagmemes, noun phrase margin 1 and noun phrase margin 2. The general noun phrase (Nx.1) manifests the following tagmemes: ±Act. in sentence types intransitive declarative, intransitive declarative motion, and transitive declarative; ±G. in sentence types transitive declarative and transitive imperative; ±Sub. in sentence type stative declarative; +Id.Pr. in sentence type identity; +Loc. Foc. in the location-oriented noun phrase; +Man.Foc. in the manner-oriented noun phrase; +Att.Foc. in the attraction-oriented noun phrase; +Caus.Foc. in the causation-oriented noun phrase; +Ref.Foc. in the referent-oriented noun phrase; ±Possr. in the possession phrases. The double function interrogative noun phrase (Nx.2) manifests the same tagmemes as Nx.1 and also the tagmeme +D.F.Int.$_a$ in the sentence type interrogative (a). The demonstrative noun phrase (Nx.3) manifests the same tagmemes as Nx.1 and also the tagmeme +Id.Sub in the sentence type identity. The personal noun phrase (Nx.4) manifests the tagmemes: ±Repr. in the sentence type transitive declarative quotative; +Voc.Foc. in the vocative phrase. The internal structure of Nx.1, which is representative of the first four noun phrase types, is shown in the following formula: +Nx1H ±Nx.Mg.1 ±Nx.Mg.2; the obligatory tagmeme, noun phrase 1 head (+Nx1H), occurs phrase initially and is manifested by the general noun class; the optional margin tagmemes are manifested by the same classes as the margin tagmemes in the verb phrases.

Examples of the first four noun phrase types are: Nx.1: yukreka [Nx1H] *earth*; ehnï - ymo [Nx1H - Nx. Mg.1] *river - big*; romšekrï - ha ka [Nx1H - Nx.Mg.2] *my nephew - right then*; kana - komo - hatï [Nx1H - Nx.Mg.1 - Nx.Mg.2] *fish - collective - it is said*; Nx.2: tenï [Nx2H] *what?*; nokï - ymo [Nx2H - Nx.Mg.1] *what - big and bad*; Nx.3: omoro [Nx3H] *you*; norotho - cko [Nx3H - Nx.Mg.1] *it - little*; uro - šarha [Nx3H - Nx.Mg.2] *I - also*; Nx.4: pepetho [Nx4H] *older brother*; amna - ha [Nx4H - Nx.Mg.2] *we (exclusive)*.

The other five classes of noun phrases are group (ii) types which have as their nuclei two obligatory tagmemes, focus and orienter, and as satellites the same two margin tagmemes as the verb and noun phrases already described. The location-oriented noun phrase (Nx.5) manifests the sentence satellite tagmeme ±L. The manner-oriented noun phrase (Nx.6) manifests the sentence satellite tagmeme ±M. The attraction-oriented noun phrase (Nx.7) manifests the tagmeme ±Comp. in the stative sentence types and in the stative possession phrases. The causation-oriented noun phrase (Nx8) manifests the sentence satellite tagmeme ±Caus. The referent-oriented noun phrase manifests the tagmeme ±Ref. in the transitive sentence types and in the transitive possession phrases. These orienter noun phrases may also manifest a tagmeme on the word level—the non-possessed stem of general noun subclass C.2. The internal structure of Nx.5, which is representative of these five noun phrase types, is shown in the following formula: +Loc.Foc. +Loc.Or. ±Nx.Mg.1 ±Nx.Mg.2; the obligatory tagmeme, location focus (+Loc.Foc.), is manifested by one of the first three noun phrase types which are described in the preceding paragraph; the obligatory tagmeme, location orienter (+Loc.Or.), is manifested by the postpositional location orienter attributive; the optional phrase margins have already been described.

Examples of these five noun phrase types are: Nx.5: wecaru - hona [Loc.Foc. - Loc.Or.] *Wicharu (place name) - towards*; noro rma

rha - yawo - ymo [Loc.Foc. - Loc.Or. - Nx.Mg.1] *him yet also - with - big one*; kosowarayo ymo - hona - mak ha [Loc.Foc. - Loc.Or. - Nx.Mg.2] *puma, big - towards - but*; Nx.6: onï - wyaro [Man.Foc. - Man.Or.] *this one - like in appearance*; oroko yawno - me - ymo - rma [Man.Foc. - Man.Or. - Nx.Mg.1 - Nx.Mg.2] *the thing with eagle feathers - attributivizer - big - yet*; Nx.7: ten - še [Att.Foc. - Att.Or.] *what - attracted by?*; anhï - šehra - tï [Att.Foc. - Att.Or. - Nx.Mg.2] *badness - not attracted by - it is said*; Nx.8: ero - ke [Caus.Foc. - Caus.Or.] *it - because of*; koñïrï - ke - mak ha [Caus.Foc. - Caus.Or. - Nx.Mg.2] *his seeing us - because of - only*; Nx.9: rohecenho -wya [Ref.Foc. - Ref.Or.] *my wife - to*. There is a variant of the nucleus of the orienter type of noun phrase: the focus and orienter tagmemes are replaced by a special type of possessed orienter tagmeme; this is manifested by the orienter with possessor margin; the possessor becomes the phrase focus, but it is bound to the orienter; e.g. Nx.5: khoko *concerning us* (*inclusive*); Nx.6. rowyaro *like me* (*in appearance*); Nx.7: oše *attracted by you*; Nx.9: rowya *by me*.

2.3. The attributive phrase hyperclass consists of four classes of attributive phrases which parallel the first four classes of attributives. They are group (i) phrase types, having obligatory nucleus tagmeme, attributive phrase head, and optional satellite tagmemes, attributive phrase margin 1 and attributive phrase margin 2. The general attributive phrase (Ax. 1) manifests the sentence satellite tagmeme, ±M. The double function interrogative attributive phrase (Ax.2) manifests the same tagmeme as Ax.1 and also the tagmeme +D.F.Int.$_d$ in the sentence type interrogative (d). The action-focused attributive phrase (Ax.3) manifests the tagmeme ±Comp. in the stative sentence types and in the stative possession phrases. The motion modifier attributive phrase (Ax.4) manifests the tagmeme ±Mot.Mod. in the intransitive motion sentence types and in the intransitive motion possession phrases. The internal structure of Ax.1, which is representative of all the attributive phrase types, is shown in the following formula: +Ax1H ± Ax.Mg.1 ±Ax.Mg.2; the obligatory tagmeme, attributive phrase 1 head (+Ax1H), occurs in phrase initial and is manifested by the general attributive class; the optional margin tagmemes are manifested by the same classes as the margin tagmemes in the verb and noun phrases.

Examples of attributive phrases are: Ax.1: tahyaye [Ax1H] *looking up*; acke - cko [Ax1H - Ax.Mg.1] *bad - little*; tmamke - komo ymo [Ax1H - Ax.Mg.1] *having walls - collective, big*; thokoře - cko - rma [Ax1H - Ax.Mg.1 - Ax.Mg.2] *having child - little - yet*; Ax.2: soke [Ax2H] *how?*; Ax.3: kwayeh-kacahke [Ax3H] *desiring our being killed*; kïrï yencahke - komo [Ax3H - Ax.Mg.1] *desiring man's being seen - collective*; twohra -makï [Ax3H - Ax.Mg.2] *its not being shot - only*; Ax.4: wa.raro [Ax4H] *close by the river*; mahoře - mak ha rha [Ax4H - Ax.Mg.2] *by land - only, also*.

2.4. The locative phrase hyperclass consists of two classes of locative phrases which parallel the two classes of locatives. They are group (i) phrase types, having obligatory nucleus tagmeme, locative phrase head, and optional satellite tagmemes, locative phrase margin 1 and locative phrase margin 2. The general locative phrase (Lx.1) manifests the sentence satellite tagmeme, ±L. The double function interrogative locative phrase (Lx.2) manifests the same tagmeme as Lx.1 and also the tagmeme +D.F.Int.$_b$ in the sentence type interrogative (b). The internal structure of Lx.1, which is representative of both locative phrase types, is shown in the following formula: +Lx1H ±Lx.Mg.1 ±Lx.Mg.2. The obligatory tagmeme, locative phrase 1 head (+Lx1H), occurs in phrase initial and is manifested by the general locative class. The optional margin tagmemes are manifested by the same classes as the margin tagmemes in the verb, noun and attributive phrases. Examples of

locative phrases are: Lx.1: tano [Lx1H] *here*; ïto - ymo [Lx1H - Lx.Mg.1] *there - big and bad (referring to something which is in that location*; šaro - ha kapha rha [Lx1H - Lx.Mg.2] *to here - for the time being, also*; Lx.2: henta [Lx2H] *where?*

2.5. The time phrase hyperclass consists of two classes of time phrases which parallel the two classes of time words. They are group (i) phrase types, having obligatory nucleus tagmeme, time phrase head, and optional satellite tagmemes, time phrase margin 1 and time phrase margin 2. The general time phrase (Tx.1) manifests the sentence satellite tagmeme, ±T. The double function interrogative time phrase (Tx.2) manifests the same tagmeme as Tx.1 and also the tagmeme +D.F.Int.$_c$ in the sentence type interrogative (c). The internal structure of Tx.1, which is representative of both time phrase types, is shown in the following formula: +Tx1H ±Tx.Mg.1 ±Tx.Mg.2. The obligatory tagmeme, time phrase 1 head (+Tx1H), occurs phrase initially and is manifested by the general time word class. The optional margin tagmemes are manifested by the same classes as the margin tagmemes in the verb and other phrases. Examples of time phrases are: Tx.1: awanaworo [Tx1H] *tomorrow*; oroke - rma ha ša [Tx1H - Tx.Mg.2] *yesterday - yet, really*; toche - komo [Tx1H - Tx.Mg.1] *after their going - collective*; kehtoko - cho - ha rha [Tx1H - Tx.Mg.1 - Tx.Mg.2] *when our being - little and good - also*; Tx.2: sokentoko [Tx2H] *when?*

2.6. The possession phrase hyperclass consists of eleven classes of possession phrases. These classes, and the tagmemic formulas for their nuclei, are listed in table 4. They are divided into three groups according to the class of word which fills the item possessed slot: the first five classes are noun possession phrases, the item possessed being a noun; the next two classes are attributive possession phrases, the item possessed being an attributive; the last four classes are time possession phrases, the item possessed being a time word. Within these three groups there are contrastive phrase types according to: (i) the class of verb base from which the possessed noun, attributive and time words are derived (there is also one nonderived possessed noun - in NP1), and (ii) the particular sentence level tagmeme (±Mot. Mod., ±Ref., ±Comp.) which co-occurs with the type of action (intransitive motion, transitive, stative) involved in the item possessed tagmeme. The tagmemes in the table represent only the nuclei. There are also two types of optional satellite tagmemes: (i) the phrase margin tagmemes (±Poss.x.Mg.1 and ±Poss.x.Mg.2) which are manifested by the same classes as the margin tagmemes in the verb and other phrases; and (ii) sentence satellite tag-

TABLE 4

Possession phrases and tagmemic formulas for nuclei

Noun Possession (NP.)	
NP.1 Simple	±Possr. +It.Possd.
NP.2 Intransitive action	±Possr. +Intr.Act.Possd.
NP.3 Intransitive motion	±Mot.Mod. ±Possr. +Intr.Mot.Possd.
NP.4 Transitive action	±Ref. ±Possr. +Tr.Act.Possd.
NP.5 Stative	±Comp. ±Possr. +St.Possd.
Attributive Possession (AP.)	
AP.1 Transitive action focussed	±Ref. ±Possr. +A.Possd.(Act.Foc.)
AP.2 Transitive action purposed	±Ref. ±Possr. +A.Possd.(Act.Pur.)
Time Possession (TP.)	
TP.1 Intransitive action	±Possr. +T.Intr.Act.Possd.
TP.2 Intransitive motion	±Mot.Mod. ±Possr. +T.Intr.Mot.Possd.
TP.3 Transitive action	±Ref. ±Possr. +T.Tr.Act.Possd.
TP.4 Stative	±Comp. ±Possr. +T.St.Possd.

memes—these have been found to occur occasionally with certain of the possession phrases which involve action. All possession phrases are group (i) types, having as their minimum nucleus one obligatory tagmeme; they differ from other group (i) phrase types in that the nucleus is capable of being expanded.

The noun possession phrases manifest the same tagmemes as the general noun phrase (see **2.2**); those which involve action (all except NP.1), however, occur most frequently manifesting the tagmeme +Id.Pr. in identity sentence type; only rarely have they been found manifesting other tagmemes. The attributive possession phrase - transitive action focused (AP.1) - manifests the tagmeme ±Comp. in the stative sentence types and in the stative possession phrases (NP.5 and TP.4). The attributive possession phrase - transitive action purposed (AP.2) - manifests the tagmeme ±Mot.Mod. in the intransitive motion sentence types and in the intransitive motion possession phrases (NP.3 and TP.2). The time possession phrases manifest the sentence satellite tagmeme ±T.

The internal structure of the nuclei of these phrases is now briefly described. In all possession phrases there is an optional tagmeme, possessor (±Possr.), which occurs immediately preceding the item possessed and is manifested by the general noun phrase class (note: in one instance this tagmeme is manifested by a member of the quantitative attributive class in a simple noun possession phrase: toweneša - yohï [±Possr. - +It.Possd.] *one - its tree (only one tree)*). The other optional tagmemes differ according to the type of possession phrase; they occur relatively infrequently and always preceding the possessor; they are sentence level tagmemes and are described in section **3**. The obligatory item possessed tagmemes occur nucleus finally and are followed only by the optional phrase margin tagmemes; in NP.1 the tagmeme +It.Possd. is manifested by the general noun sub-class A.1; in NP.2 the tagmeme +Intr.Act.Possd. is manifested by the general noun sub-class A-2; in NP.3 the tagmeme +Intr.Mot.Possd. is manifested by the general noun sub-class A.3; in NP.4 the tagmeme +Tr.Act.Possd. is manifested by the general noun sub-class A.4; in NP.5 the tagmeme +St.Possd. is manifested by the general noun sub-class A-5; in AP.1 the tagmeme +A.Possd (Act.Foc.) is manifested by the action focused attributive sub-class 3 (a); in AP.2 the tagmeme +A.Possd. (Act.Pur.) is manifested by the motion modifier attributive sub-class 4(c)(i); in TP.1 the tagmeme +T.Intr.Act.Possd. is manifested by the time word sub-class 1(b)(i); in TP.2 the tagmeme +T.Intr.Mot.Possd. is manifested by the time word sub-class 1(b)(ii); in TP.3 the tagmeme +T.Tr.Act.Possd. is manifested by the time word sub-class 1(b)(iii); in TP.4 the tagmeme +T.St. Possd. is manifested by the time word sub-class 1(b)(iv).

In the examples of possession phrases which follow, the minimum phrase type will not be given since this is identical with a possessed word (noun, attributive or time) and these have been illustrated in the appropriate sections. Examples of possession phrases are: NP.1: anhï - yokato [Possr. - It.Possd.] *bad one - his spirit*; kececе - yeherï - yıno - hatï [Possr. - It.Possd. - Poss.x.Mg.1 - Poss.x.Mg.2] *bad tree - its fruit - big and bad - it is said*; NP.2: wewe - yomokotonïrï [Possr. - Intr.Act.Possd.] *the tree - its falling*; NP.3: kamara - yomoknïrï [Possr. - Intr.Mot.Possd.] *jaguar - its coming*; ïhomoso - rotonïrï [Mot.Mod. - Intr.Mot. Possd.] *purposing the planting of it (i.e. the field) - my going*; NP.4: hakřa - yononïrï [Possr. - Tr.Act.Possd.] *peccary - its being eaten*; owya - menhonïrï [Ref. - Tr.Act. Possd.] *by you - its being painted*; acke - koñïrï [M (sentence satellite) - Tr.Act.-Possd.] *bad - our being seen*; NP.5: kïrï - yehnïrï [Possr. - St.Possd.] *man - his being*; tohra - oyehnïrï [Comp. - St.Possd.] *not*

going - your being; ohše - kehnïrï [M. - St.Possd.] *good - our being*; AP.1: nuno - yoñhera [Possr. - A.Possd.(Act.Foc.)] *the moon - its not being seen*; owya - kamara - wocahke [Ref. - Possr. - A.Possd. (Act.Foc.)] *by you - jaguar - desiring the shooting of it*; AP.2: kïwya - hawše - yonoso [Ref. - Possr. - A.Possd.(Act.Pur.)] *by us - wild turkey - purposing the eating of it*; awanaworo - oyoñše [T (sentence satellite) - A.Possd. (Act.Pur.)] *tomorrow - purposing the seeing of you*; TP.1: rowanï - yeřewnïtoko [Possr. - T.Intr.Act.Possd.] *my breast - when its hurting*; TP.2: toche - komo [T.Intr.Mot.Possd. - Poss.x.Mg.1] *after their going - collective*; (note: there are no recorded occurrences of an expanded nucleus in TP.2); TP.3: rowya - mararï - yakñohontoko [Ref. - Possr. - T.Tr. Act.Possd.] *by me - the field - when its being burned*; ohše - koñetoko - ekato wya [M (sentence satellite) - T.Tr.Act.Possd. - Ref.] *good - when our being seen - by the spirit*; TP.4: anhïtho - yehtoko [Possr. - T.St. Possd.] *bad one - when his being*; kwayehka-cahke - tehtoko - hatï [Comp. - T.St.Possd. - Poss.x.Mg.2] *desiring our being killed - when his being - it is said*; ïto - oyehtoko [L. (sentence satellite) - T.St.Possd.] *there - when your being*.

2.7. The quantitative phrase (Qn.x.) has only been recorded in elicited utterances and in the response type of sentence; in both cases it has been a complete utterance in itself. The internal structure is shown in the following formula: +Qny. +Qn.It. The obligatory tagmeme, quantity (+Qny.), occurs in phrase initial and is manifested by the quantitative attributive word class. The obligatory tagmeme, quantitative item (+Qn.It.), occurs in phrase final and is manifested by the general noun word class. asako - wašuru [Qny. - Qn.It.] *two - horns*; osorowawo - ïmšarï [Qny. - Qn.It.] *three roots*.

2.8. The ideophone phrase (Ideo.x.) manifests the tagmeme +Ideo.Pr. in the ideophone sentence and the special sentence tagmeme ±Ideo, in other types of sentences. The internal structure is shown in the following formula: +Ideo.x.H ±Ideo.x.Mg. the obligatory tagmeme, ideophone phrase head (+Ideo.x.H.), occurs in phrase initial and is manifested by the ideophone particle word class. The optional tagmeme, ideophone phrase margin (±Ideo.x.Mg.), occurs in phrase final and is manifested by the modal particle word class. pe.y [Ideo.x.H.] *shooting with gun*; kmo - šarha rha [Ideo.x.H. - Ideo. x.Mg.] *falling into hammock - again, also*.

2.9. The vocative phrase (Voc.x.) manifests the tagmeme +Voc. in the vocative sentence. The internal structure is shown in the following formula: +Voc.Foc. +Voc.Or. The obligatory tagmeme, vocative focus (+Voc.Foc.), occurs in phrase initial and is manifested by one of the following: (i) personal noun phrase (Nx.4); (ii) the intransitive motion verb phrase omok ha *come*; or (iii) the modal particle ha. The obligatory tagmeme, vocative orienter (+Voc.Or.), occurs in phrase final and is manifested by the vocative particle word class. kaywere ha - y [Voc.Foc. - Voc.Or.] *call to Kaywere*; omok ha - y *come*; ha - y *call of greeting*.

3. The sentence is defined as a syntactic unit which potentially occurs alone as a complete utterance. It may consist of a single word or phrase (as in the minimum form of most sentence types), a sequence of phrases (as in the expanded forms of most sentence types), or a complex form of sentence within sentence (as in the quotative sentence type). Sentence types, with tagmemic formulas for their nuclei, are listed in table 5. There are two main classes: the first twelve types are predicate type sentences; the remaining four types are non-predicate types. Of the predicate type sentences, the first ten have verb fillers of the predicate slot, and the other two have predicates with non-verb fillers.

Table 5 shows only the nuclear tagmemes; these provide the diagnostic criteria for distinguishing sentence types (since structural levels higher than the sentence have

TABLE 5

Sentence types and tagmemic formulas for nuclei

Predicate type sentences:	
1. Intransitive declarative	+Intr.Dec.Pr. ±Act.
2. Intransitive declarative motion	±Mot.Mod. +Intr.Dec.Mot.Pr. ±Act.
3. Transitive declarative	±G. +Tr.Dec.Pr. ±Act. ±Ref.
4. Transitive declarative quotative	+Q.G. +Tr.Dec.Q.Pr. ±Repr. ±Ref.
5. Stative declarative	±Sub. ±Comp. +St.Dec.Pr.
6. Intransitive imperative	+Intr.Imp.Pr.
7. Intransitive imperative motion	±Mot.Mod. +Intr.Imp.Mot.Pr.
8. Transitive imperative	±G. +Tr.Imp.Pr. ±Ref.
9. Transitive imperative quotative	+Q.G. +Tr.Imp.Q.Pr. ±Ref.
10. Stative imperative	±Comp. +St.Imp.Pr.
11. Identity	+Id.Pr. +Id.Sub.
12. Ideophone	+Ideo.Pr.
Non-predicate type sentences:	
13. Vocative	+Voc.
14. Exclamation	+Exc.
15. Interrogative:-	
(a) Double function actor/subject/goal	+D.F.Int.$_a$ ±Int.Base^a
(b) Double function location	+D.F.Int.$_b$ ±Int.Base^b
(c) Double function time	+D.F.Int.$_c$ ±Int.Base^c
(d) Double function manner	+D.F.Int.$_d$ ±Int.Base^d
16. Response	+Res.

been ignored in this paper the criteria of external distribution features have not been used in identifying sentence types, except in the case of interrogative and response types). There are also four satellite tagmemes which occur in predicate type sentences and which constitute an expansion of the basic nucleus in those sentences. The satellite tagmemes, in their most frequent order of occurrence, are: Time (T), Manner (M), Location (L), and Causation (Caus.). In relation to the nucleus they usually occur first in the sentence, but there is considerable variation in the order of occurrence. Not more than two satellites have been found to occur in the same sentence and there is usually not more than one in any sentence. They occur most frequently in the declarative sentence types; in some of the other predicate type sentences, of which there are not many examples in the data, no satellite tagmemes have been recorded, but they are treated as potentially capable of occurring in these sentences; in the non-predicate types, however, they have not been found to occur at all. The satellites are now briefly described:

The time tagmeme is manifested by the following classes: general time phrase (Tx.1), double function interrogative time phrase (Tx.2), and any time possession phrase (TP.1, TP.2, TP.3, and TP.4).

The manner tagmeme is manifested by the following classes: manner oriented noun phrase (Nx.6), general attributive phrase (Ax.1), double function interrogative attributive phrase (Ax.2), and quantitative attributive word (A.5).

The location tagmeme is manifested by the following classes: location oriented noun phrase (Nx.5), general locative phrase (Lx.1), and double function interrogative locative phrase (Lx.2).

The causation tagmeme is manifested by the causation oriented noun phrase (Nx.8).

The occurrence of satellite tagmemes will be illustrated in the description of the different sentence types.

There is one special type of tagmeme which occurs ir the first three sentence types; this is the ideophone, manifested by an ideophone phrase. This may occur, with sentence satellite tagmemes, as a complete utterance, and it is then treated as a separate type of sentence (type 12, described and illustrated below). It also occurs, however,

within one of the first three sentence types, where it acts as an additional type of predicate tagmeme, reinforcing the action expressed in the verb. It is then treated as a special sentence-level tagmeme. This will be illustrated in the description of the first three sentence types.

Before describing the sentence types in detail, one other general feature of sentence level tagmemes should be noted: almost any type of tagmeme may be manifested by a sequence of phrases or other fillers in paratactic relationship; these are treated as complex fillers of a single slot.

The internal structure of each sentence type will now be described and illustrated with examples, where these are available, showing: (i) the minimum form of the nucleus, (ii) expansion of the nucleus, and (iii) further expansions by means of the satellite and special tagmemes. In a number of cases the minimum form or the expanded nucleus are the only forms which have been found to occur.

3.1. The intransitive declarative sentence has the meaning of a declaration of action that is not directed toward a goal. The obligatory tagmeme, intransitive declarative predicate (+Intr.Dec.Pr.), is manifested by the intransitive declarative verb phrase (Vx.1). The optional tagmeme, actor (±Act.), is manifested by the following classes: general noun phrase (Nx.1), double function interrogative noun phrase (Nx.2), demonstrative noun phrase (Nx.3), and noun possession phrases (NP.1, etc.). nïnïkye hatï [Intr. Dec.Pr.] *he slept, it is said*; nuše - nekayïmye [Act. - Intr.Dec.Pr.] *younger brother - he climbed*; amñerma - nemokotono - wewe [T - Intr.Dec.Pr. - Act.] *today - it fell - the tree*; kïkanawathïrï yaka - nemokotono [L - Intr.Dec.Pr.] *into our canoe - it fell*; saš - nasanïmye [Ideo. - Intr.Dec.Pr.] *act of rising - it raised itself (jaguar)*.

3.2. The intransitive declarative motion sentence has the meaning of intransitive action which involves motion and may be directed toward a specific purpose which involves other action or may be modified by a special motion modifier. The obligatory tagmeme, intransitive declarative motion predicate (+Intr.Dec.Mot.Pr.), is manifested by the intransitive declarative motion verb phrase (Vx.2). The optional tagmeme, motion modifier (±Mot.Mod.), is manifested by the motion modifier attributive phrase (Ax.4) and the attributive possession phrase, transitive action purposed (AP.2). The optional tagmeme, actor (±Act.), is the same as in the intransitive declarative sentence. momokno ha [Intr.Dec.Mot.Pr.] *you have come*; amna - ntoye - wa.raro [Act. - Intr.Dec.Mot.Pr. - Mot.Mod.] *we - went - close by the river*; maraï yakñohso - ntono - pepetho [Mot.Mod. - Intr.Dec.Mot.Pr. - Act.] *the field, purposing the burning of it - he went - older brother*; rownïknïtoko - nomokno [T - Intr.Dec.Mot.Pr.] *when my sleeping - he came*; amna - ntoye šarha - owto hona kanaš en hona ha [Act. - Intr.Dec.Mot.Pr. - L] *we - we went again - to their place, to Kanashen*; tïhye - mïteno [M - Intr.Dec. Mot.Pr.] *wifed (i.e. with your wife) - you will go?*; amna - nasawnukye ha - kmay [Act. - Intr.Dec.Mot.Pr. - Ideo.] *we - we went up river - act of going away*.

3.3. The transitive declarative sentence has the meaning of a declaration of action that is directed toward a goal. The obligatory tagmeme, transitive declarative predicate (+Tr.Dec.Pr.), is manifested by the transitive declarative verb phrase (Vx.3). The optional tagmeme, actor (±Act.), is the same as in the intransitive declarative sentence. The optional tagmeme, goal (±G), is manifested by the same classes as the actor tagmeme; when goal and actor tagmemes occur in the same sentence, the goal always precedes, and the actor usually follows, the predicate tagmeme; where the actor does not follow the predicate it occurs between the goal and the predicate. Elsewhere, as with most sentence tagmemes, there is some variation in the order of occurrence, though the formula represents the most frequently occurring order. The optional tagmeme, referent (±Ref.), has the meaning of indi-

rect goal of the action and is manifested by the referent-oriented noun phrase (Nx.9). wehtano ha ka [Tr.Dec.Pr.] *I will go look for it right now*; mareya - wïmyaha - ïwya [G. - Tr.Dec.Pr. - Ref.] *knife - I will give it - to him*; merekomotho - yoskano - ïhyosïrï hoko - okoye [G. - Tr.Dec.Pr. - L. -Act.] *the boy - it bit him - on the leg - the snake*; oskeamna-neřeye [M - Act. - Tr.Dec.Pr.] *thus - we - we did it*; krïtïk - nakïhtoye hatï [Ideo. - Tr.Dec.Pr.] *act of making with the hands - he made it, it is said.*

3.4. The transitive declarative quotative sentence has the meaning of the report of a quotation. The nuclear tagmemes correspond to the tagmemes in the transitive declarative sentence, but three of them are manifested by different classes. The obligatory tagmeme, transitive declarative quotative predicate (+Tr.Dec.Q.Pr.), has the meaning of the reporting of a quotation and is manifested by the transitive declarative quotation report verb phrase (Vx.4). The obligatory tagmeme, quotative goal (+Q.G.), has the meaning of the item which is quoted and is manifested by any sentence type; it occurs preceding the predicate tagmeme or partly preceding and partly following the predicate tagmeme. The optional tagmeme, reporter (±Rep.), has the meaning of the person who reports the quotation and is manifested by the personal noun phrase (Nx.4). The optional tagmeme, referent (±Ref.), is the same as in the transitive declarative sentence. tok ha - kacowni - tok ha [Q.G. (complex filler partly preceding and partly following the predicate) - Tr.Dec.Q.Pr.] *'go' - they said it - 'go'*; encahra tehšaha kurotho - kekonï - amna ha [Q.G. (manifested by stative declarative sentence) - Tr.Dec.Q. Pr. - Repr.] *'we are not hearing it' - we (excl.) said it - we (excl.)*; tehe - keko matï rhe - rohecenho wya [Q.G. (manifested by intr. dec. mot. sentence) - Tr.Dec.Q.Pr. - Ref.] *'I'm going' - I said it already - to my wife*; noro ohece ha - kekonï hatï - ohece mokro ha ayakorono ohece cko mokro ha [Q.G. (complex filler, consisting of three identity sentences, one preceding and two following the predicate) - Tr.Dec.Q.Pr.] *'she, your wife' - he said it, it is said - 'your wife, that one, your companion, your good wife, that one'.*

3.5. The stative declarative sentence has the meaning of declaration of state. The obligatory tagmeme, stative declarative predicate (+St.Dec.Pr.), is manifested by the stative declarative verb phrase (Vx.5). The optional tagmeme, complement (± Comp.), has the meaning of a specific state which is the complement of the stative verb and is manifested by the following classes: action focussed attributive phrase (Ax.3); attributive possessor phrase, transitive action focussed (AP.1); and attraction oriented noun phrase (Nx.7). The optional tagmeme, subject (±Sub.), has the meaning of the subject of the state and is manifested by the same classes as the actor tagmeme in the intransitive declarative sentence. The formula indicates that there is only one obligatory tagmeme, the predicate. This is true in only one special type of construction; elsewhere there are at least two tagmemes in stative declarative sentences, the predicate and either the complement or one of the sentence satellite tagmemes. The special construction occurs frequently at the end of stories; it is: naha *or* naha kapha *it is or, it is for the time being* (*meaning: that's all for now*). Other examples of the stative declarative sentence are: encahra - tehšaha - kurotho [Comp - St.Dec.Pr. - Sub.] *not hearing of it - we(incl.) are - we(incl.)*; ekeyu yïmcahke - naye [Comp. - St.Dec.Pr.] *bread, desiring the giving of it - he is*; rohece še - wehšaha [Comp. - St.Dec.Pr.] *my wife, attracted by - I am* (*meaning: I want a wife*); ïto - nehšackonï šarha [L - St.Dec.Pr.] *there - they were, also*; cankeñe ha - wehšakonï - ero ke ha [M - St.Dec.Pr. - Caus.] *not knowing - I was - because of it*; omokhïra - nahko - mařu - amñerma [Comp. - St.Dec. Pr. - Sub. - T.] *not coming - he was - Mario - today* (*meaning: Mario did not come today*):

henta - kacefaratho - nahko [L. - Sub. - St.Dec.Pr.] *where - machete - it was?*

3.6. The intransitive imperative sentence has the meaning of command to action that is not directed toward a goal. The obligatory tagmeme, intransitive imperative predicate (+Intr.Imp.Pr.), is manifested by the intransitive imperative verb phrase. ownïhko ha [Intr.Imp.Pr.] *sleep*; karhe karhe - amanhoco.ko [M. - Intr.Imp.Pr.] *high and fast - everybody dance.*

3.7. The intransitive imperative motion sentence has the meaning of command to intransitive action which involves motion and which may be directed toward a specific purpose that involves other action or may be modified by a special motion modifier. The obligatory tagmeme, intransitive imperative motion predicate (+Intr.Imp.Mot. Pr.), is manifested by the intransitive imperative motion verb phrase (Vx.7). The optional tagmeme, motion modifier (±Mot. Mod.), is the same as in the intransitive declarative motion sentence; it has not been recorded in the imperative sentence type. omohko [Intr.Imp.Mot.Pr.] *come*; tok ha - oyowanï ho ha ka [Intr.Imp.Mot.Pr. - L.] *go - on your breast, right now.*

3.8. The transitive imperative sentence has the meaning of command to action that is directed toward a goal. The obligatory tagmeme, transitive imperative predicate (+Tr.Imp.Pr.), is manifested by the transitive imperative verb phrase (Vx.8). The optional tagmemes, goal (±G.) and referent (±Ref.), are the same as in the transitive declarative sentence. encaco.ko [Tr.Imp. Pr.] *everybody hear it*; rowru ha ka - ayhoko [G. - Tr. Imp. Pr.] *my bread, right now - cause it to be baked*; hakŕa - tïmko - rowya [G. -Tr. Imp.Pr. - Ref.] *peccary - give it - to me*; horme ñhe ha - kahko [M. - Tr. Imp. Pr.] *big, more - make it.*

3.9. The transitive imperative quotative sentence has the meaning of command to report a quotation. It has not been found to occur in the data recorded to date, but is included here since it is assumed that it is a probable type of utterance and it completes the parallelism between the declarative and imperative sentence types. The obligatory tagmeme, transitive imperative quotative predicate (+Tr.Imp.Q.Pr.), is potentially manifested by the transitive imperative quotation report verb phrase (Vx.9). The obligatory tagmeme, quotative goal (+Q. G.), and the optional tagmeme, referent (±Ref.), are the same as in the transitive declarative quotative sentence.

3.10. The stative imperative sentence has the meaning of command to be in a state. The obligatory tagmeme, stative imperative predicate (+St.Imp.Pr.), is manifested by the stative imperative verb phrase (Vx. 10). The optional tagmeme, complement (±Comp.), is the same as in the stative declarative sentence. tohra - eško [Comp. - St. Imp.Pr.] *not going - be (meaning: do not go)*; tano ha ka matï - eško [L. - St.Imp.Pr.] *here, right now, but - be (meaning: stay here)*; tomyahoře - ešкc [M. - St.Imp.Pr.] *skilful - be.*

3.11. The identity sentence has the meaning of identification of an item. The obligatory tagmeme, identity predicate (+Id.Pr.), has the meaning of the item which is being identified and is manifested by the following classes: general noun phrase (Nx.1), double function interrogative noun phrase (Nx.2), demonstrative noun phrase (Nx.3), and noun possession phrases (NP.1, etc.). The obligatory tagmeme, identity subject (+Id.Sub.), has the meaning of demonstrative referent to the item which is being identified and is manifested by the demonstrative noun phrase (Nx.3). eñhořeñehnï - urotho ha [Id.Pr. - Id.Sub.] *the one who does not make it well - I*; ñamoro mokyamo - oyonmahpïyemï komo ha [Id.Sub. (complex filler) - Id.Pr.] *they, those people - the ones who live with you, collective*; nokï - mokro hatï [Id.Pr. - Id.Sub.] *who - that one, it is said?*; owya menhonïrï - moro [Id.Pr. - Id. Sub.] *by you, its being painted - that one*; oroke - tuna kwaka - emokotosaho - moro

[T. - L. - Id.Pr. - Id.Sub.] *yesterday - in the river - the one that fell - that one.*

3.12. The ideophone sentence has the meaning of expressing action by means of an ideophone instead of a verb. The obligatory tagmeme, ideophone predicate (+Ideo.Pr.), is manifested by the ideophone phrase (Ideo.x.). This is different from the special sentence tagmeme, ideophone, in that it occurs alone as a complete utterance and is potentially expandable by means of sentence satellite tagmemes. šo. [Ideo.Pr.] *act of burning* (*a carcass*); krïtïk krïtïk krïtïk [Ideo.Pr. (complex filler)] *act of making with the hands*; kmo - rakatawro [Ideo.Pr. - M.] *act of sleeping - in the middle of the trip*; knïk - ïto [Ideo.Pr. - L.] *act of staying* (*for a few days, weeks, etc.*) - *there.*

3.13. The vocative sentence has only one tagmeme, vocative, and it is manifested by the vocative phrase. It is illustrated in sec. **2.9**.

3.14. The exclamation sentence has only one tagmeme, exclamation, and it is manifested by an exclamation word. It is illustrated in sec. **1.6.**

3.15. The interrogative sentence has the meaning of interrogation expressed by means of a special type of interrogative word which functions also as the filler of another sentence slot. This is in contrast with other types of interrogation which are expressed by means of special intonation contours superimposed on a declarative sentence type. This second type of interrogative utterance has been included in the declarative sentences for the purpose of this paper. Further study of intonation contours is needed for a more definitive analysis.

There are four sub-classes of the interrogative sentence; these are differentiated according to the secondary function of the interrogative word; in sub-class (a) the interrogative word functions also as the actor, subject, goal, or identity predicate in one of the other sentence types; in (b) it functions in the location slot; in (c) it functions in the time slot; in (d) it functions in the manner slot. The double function interrogative may occur alone as a complete utterance or it may be part of a sentence.

In sub-class (a) the obligatory tagmeme, double function interrogative (a) (+D.F. Int.$_a$), is manifested by the double function interrogative noun phrase (Nx.2). In sub-class (b) the obligatory tagmeme, double function interrogative (b) (+D.F.Int.$_b$), is manifested by the double function interrogative location phrase (Lx.2). In sub-class (c) the obligatory tagmeme, double function interrogative (c) (+D.F.Int.$_c$), is manifested by the double function interrogative time phrase (Tx.2). In sub-class (d) the obligatory tagmeme, double function interrogative (d) (+D.F. Int.$_d$), is manifested by the double function interrogative attributive phrase (Ax.2). In all four sub-classes the optional tagmeme, interrogative base, is manifested by a dependent form of any declarative or identity type of sentence; it is dependent since it lacks the actor, etc., location, time, or manner tagmemes. e.g. nokï ymo [D.F.Int.$_a$] *what, big and bad?*; nokï - teno [D.F.Int.$_a$ - Int. Base$_a$] *who - he will go?*; ten - onï [D.F.Int.$_a$ - Int. Base$_a$] *what - this one?*; nokï - mwono amñerma [D.F.Int.$_a$ - Int.Base$_a$] *what - you shot, today?*; henta - mtono ha rhe [D.F. Int.$_b$ - Int.Base$_b$] *where - you went already?*; sokentoko - nomokyano [D.F.Int.$_c$ - Int. Base$_c$] *when - he will come?*; soke - wehšano [D.F.Int.$_d$ - Int.Base$_d$] *how - I am?*

3.16. The response sentence has the meaning of response to an earlier utterance or to some non-verbal behavior. It includes only those response utterances which are dependent upon a preceding utterance and are not structurally complete in themselves although they can constitute the complete utterance of one speaker. There is only one tagmeme, response, and it is manifested by any word or phrase structure. na.hana *I don't know*; wecaru hoye *from Wicharu*; šehra *not wanting* (*it*); rotontoko *when my going* (*meaning*: *when I go*).

QUIOTEPEC CHINANTEC SYLLABLE PATTERNING

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1. Introduction
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1. This paper is a description of the patterns by which syllables of Quiotepec Chinantec (hereafter usually referred to as Chinantec) are formed and by which they participate in the phonological word.[1]

Quiotepec Chinantec is the dialect spoken in San Juan Quiotepec, district of Ixtlán, Oaxaca, Mexico. Quiotepec is located approximately fifty air miles north of the city of Oaxaca. I estimate roughly the number of speakers of this dialect as 3,000, some of whom now reside in a lowland area near Valle Nacional, Oaxaca.

The linguistic affiliation of Chinantec has not been verified. Mason (1940),[2] followed by McQuown (1955) and Trager and Harben (1958), considers it a separate stock or division of Macro-Otomanguean. More recently it has been suggested by Fernández de Miranda et al. (1959) that Chinantec be treated as a division of the proposed Oto-Zapotecan or Oto-Huave phylum along with Mixtecan, Popolocan, and Chatino-Zapotecan on the one hand and Oto-Pamean on the other. See also Swadesh (1960).

No previous description of Quiotepec Chinantec has come to my attention. Weitlaner (1947) reported the phonemes of the Chiltepec dialect, and descriptions of the phonemes of other dialects are in progress.[3]

The Quiotepec dialect is one of a group of Highland Dialects that are all more or less mutually intelligible and thus comprise a single L-simplex (Hockett 1958, 323 f.). Other dialects on which data are available appear to be members of separate L-complexes. There is a strong likelihood that further investigation will show at least two more L-complexes within the so-called Chinantec language. This means that Chinantec

[1] Field work under the auspices of the Summer Institute of Linguistics, between 1951 and 1958, provided the data. This paper was adapted for publication from a thesis of the same title presented to the graduate faculty of Cornell University in partial fulfillment of the requirements for the degree of Master of Arts. I am indebted to Kenneth L. Pike for help in the analysis and to Charles F. Hockett, who guided the writing of the thesis.

[2] The bibliographical references for this paper are: M. T. Fernandez de Miranda, M. Swadesh, and R. W. Weitlaner. Some Findings on Oaxaca Language Classification and Cultural Terms, IJAL 25. 54–58 (1959). Joseph E. Grimes, Huichol Tone and Intonation, IJAL 25. 221–32 (1959). J. Alden Mason, Native Languages of Middle America, in The Maya and Their Neighbors, New York (1940). Charles F. Hockett, A Manual of Phonology, Indiana University Publications in Anthropology and Linguistics, Memoir 11, Baltimore (1955), A Course in Modern Linguistics, New York (1958). Norman A. McQuown, Indigenous Languages of Native America, AA 57.501–570 (1955). Kenneth L. Pike, Language in Relation to a Unified Theory of the Structure of Human Behavior, Part II, Glendale (1955). R. H. Stetson, Motor Phonetics, A Study of Speech Movements in Action, Second Edition, Amsterdam (1951). Morris Swadesh, The Oto-Manguean Hypothesis and Macro Mixtecan, IJAL 26.79–111 (1960). George L. Trager and Felicia E. Harben, North American Indian Languages: Classification and Maps, SIL Occasional Papers 5 (1958). Robert J. Weitlaner, The Phonemic System of Chinantec, Dialect of Chiltepec, Oaxaca, Memoirs XXVIo Congreso Internacional de Americanistas, Primera Sesión: 313–321, Mexico (1947).

[3] Linguistic work by members of the Summer Institute of Linguistics is in progress in the Ojitlán, Palantla, Lalana, and Usila dialects.

probably comprises at least six separate L-complexes.

2. A Chinantec utterance consists of one or more phonological WORDS. Evidence suggests the existence of a phonologically relevant PHRASE, with peak and border features, smaller than the utterance and larger than the word. The phonological word, however, is the largest unit within the scope of this paper. In our notation, words are separated by space: /ʔjh^{1}+nąˀ^{3} höh^{42} kǫh^{42}+o^{1}−ʔh^{31}/ *I want to see our (excl.) corncake dough.*

A (phonological) word consists of WORD JUNCTURE plus one or more SYLLABLES. In our notation, syllables within a word are separated by +: /höh^{42}/ *I see,* /ʔjh^{1}+nąˀ^{3}/ *I want,* /kǫh^{42}+o^{1}−ʔh^{31}/ *our (excl.) corncake dough.*

There are two types of syllables, NORMAL and EXTENDED.

A normal syllable consists of a TONE PATTERN and a REMAINDER, preceded by SYLLABLE JUNCTURE unless the syllable is first in the word: /ʔjh^{1}/, /nąˀ^{3}/, /höh^{42}/, /kǫh^{42}/.

A remainder consists of a PEAK, or of a peak preceded by an ONSET. In /ʔjh/, /nąˀ/, /höh/, /kǫh/, the onsets are, respectively, /ʔ/, /n/, /h/, /k/.

A peak consists of a vowel NUCLEUS, with or without a following PEAK SATELLITE. In /ąˀ/, /o/, there are no satellites; in /jh/, /öh/, /ǫh/, /iuihʔ/, the satellites are /h/ and /hʔ/.

A nucleus consists of a vowel pattern of one to three vowels, with or without NASALIZATION: /į/, /ąˀ/, /ö/, /ǫ/ from the illustration above; /ia/ in /dʸia^{2}/ *seven*; /iui/ in /siuihʔ^{14}/ *diarrhea.*

An extended syllable consists of a KERNEL and an EXTENSION. The structure of kernels is like that of a (whole) normal syllable (tone pattern plus remainder, and so on), although some specific arrangements of material in normal syllables do not occur in kernels. An extension consists of EXTENSION JUNCTURE and a tone pattern, with or without a peak satellite. Phonetically there is also a peak, but its quality is completely determined by the peak of the preceding kernel. In our notation, extended syllables appear with a dash, which represents the location of the vocalic or syllabic part of the extension: /o^{1}−ʔh^{31}/. The tone-marks before the dash indicate the location of the extension juncture.

The word /kǫh^{42}+o^{1}−ʔh^{31}/ thus consists of two syllables, normal /kǫh^{42}/ and extended /o^{1}−ʔh^{31}/. The extended syllable /o^{1}−ʔh^{31}/ consists of kernel /o^{1}/ and extension /−ʔh^{31}/. The kernel /o^{1}/ consists of tone pattern /1/ and remainder /o/ plus the preceding syllable juncture. The remainder /o/ consists of a peak with no onset; and the peak consists of a vowel nucleus with no peak satellite. The extension /−ʔh^{31}/ consists of the extension juncture, the tone pattern /31/, and peak satellite /ʔh/.

Word juncture (including stress) is a phonemic constituent of the word, syllable juncture a constituent of the syllable, and extension juncture a constituent of the extension; they are phonemic but are not phonemes (see Pike 1955, 63–6).

We assume that the structure of every word conforms to the general description given above. There are, however, doubtful cases where it has not been possible to be sure of the structure. References to impossibility in determining borders and in distinguishing extended syllables from two-syllable words (**3.11**) are allusions to the writer's uncertainty in such cases.

2.1. For the description of permitted arrangements in the word, syllables are classed as MAIN (M), with both onset and peak, and AUXILIARY (A), with no onset. Auxiliary syllables are A_1(/ų/, /į/, /a/, /oiʔ/) and A_2(/i/; /o/, /u/, /ų/ with or without peak satellite; /o/ may also occur with an extension). It is worthy of note in passing that A_2's occur only as or in inflectional affixes.

Every word contains at least one M syl-

lable. The first M may be preceded by an A_1. An A_2 may follow the last M. An extended syllable, whether an M or an A_2, may occur only as the final syllable in a word. The syllable constituents of the word may thus be diagrammed:

$$\pm A_1 + M\ (\pm M \ldots) \pm A_2.$$

± means optional occurrence and + obligatory occurrence.

M	/ñį³/	*salt*
A_1 M	/ų⁴+nį³/	*eye*
M A_2	/nįh⁴+oh¹²/	*yes, I'm going*
M M	/ʔi⁴+ñį²¹/	*bread*
A_1 $M_{extended}$	/ų⁴+nįh³¹−ʔh³¹/	*our (excl.) eyes*

Word juncture contrasts with syllable juncture within a word: /ʔi⁴+ñį²¹/ *bread* vs. /ʔi² nąh²/ *yellow corncake* and /kǫh³² ų¹+ʔö¹/ *one tamale* vs. /ʔįh¹+ųh³¹/ *you want.*

2.2. The differences between the normal syllable and the extended syllable require that they be treated separately. The constituents of the normal syllable are presented first. The extended syllable is then described with special attention to the extension which is the part that makes the extended syllable different from the normal syllable.

2.21. The tone pattern of the normal syllable is simultaneous with the remainder. The tone pattern goes with the remainder as a whole, including both onset and peak.

An onset is either SIMPLE or COMPLEX. A simple onset consists of any of the twenty-three consonant phonemes listed below. A complex onset is one of the following consonant combinations: /kw/; /ts/; /ʔ/ or /h/ followed by any nasal, /l/, or /g/; /ʔ/ followed by /w/ or /y/.

The phonological constituents of the consonants other than the LARYNGEALS (/h/, /ʔ/) are LABIAL, DENTAL, PALATAL, and VELAR positions of articulation; STOP, SPIRANT, NASAL, LATERAL, and TRILL manners of articulation, with voicing contrast for stops and spirants:

		Labial	Dental	Palatal	Velar
Stop	Vl.	p	t	t^y	k
	Vd.	b	d	d^y	g
Spirant	Vl.	f	s	x	
	Vd.	w[4]	ð	y	γ
Nasal		m	n	ñ	ŋ
Lateral			l		
Trill			r		

Laryngeals—ʔ, h

The following examples show each of the 38 possible onsets to be distinctive: /poʔ⁴/ *ball*, /buʔ⁴/ *donkey*; /pa¹/ *bunch*, /bǫ³/ *chubby*; /tu²¹/ *chicken*, /du³/ *Anthony*; /tü²/ *rifle*; /tʸü³/ *thigh*; /γoʔ² tʸa¹/ *suddenly*, /dʸa²¹/ *ten*; /tʸiah¹/ *yesterday*, /dʸiah²/ *twenty*; /koh³/ *I burn*, /goh⁴−²/ *my town*; /kuh³/ *money*, /guʔh¹³/ *I will drink*; /kwoh³²/ *hand*, /ʔgo⁴−ʔh³/ *I'm afraid*; /kwuh³¹³/ *firewood*, /gaih³²/ *three* (*animate*); /fu³/ *powder*, /wu¹/ *black widow spider*; /fihʔ¹/ *blackberry*, /wihʔ⁴/ *fish scales*; /soh³/ *incline*, /ðo³/ *there*; /xühʔ¹³/ *armadillo*, /yühʔ¹³/ *old*; /xa²/ *cliff*, /ya⁴/ *Mary*, /ʔya³¹/ *fence*; /mį³¹/ *little girl* (address), /hmį³/ *skunk*; /mǫh¹/ *bone*, /hmǫh⁴/ *root*, /ʔmǫh³/ *a cold*; /nǖ²/ *soap*, /ʔnü²¹/ *thou*; /nįh⁴³/ *I go*, /hnįh¹²/ *cloud*; /nųh⁴³/ *I listen*; /hgoh¹ tǫ³/ *arrive back*; /nų²/ *meat*, /hŋǫ⁴−ʔh³/ *I kill*; /ñü²¹/ *nine*, /hñü²¹/ *hair*, /ʔñü²¹/ *kind of fish*; /la³¹/ *trap*, /ʔla³/ *dirty*; /loh³²/ *skin*, /hlaʔ²/ *cheap*; /roh³²/ *tobacco*; /tsüh³/ *jar*; /ʔwiʔ¹/ *black*; /hu⁴/ *mosquito*, /ʔu²/ *mirror*; /ų⁴+ñį³/ *food*, /huh³+ñįʔ¹/ *Spanish* (*lang.*), /ʔi⁴+ñįʔ¹/ bread.

A peak satellite consists of /h/, /ʔ/, or some cluster of these two (**4.2**). It is convenient in stating the distribution of tone patterns to classify normal syllables by their peak satellites. A SHORT FREE syllable has no peak satellite; a LONG FREE syllable has /h/; a SHORT CHECKED syllable, /ʔ/; a LONG CHECKED, /hʔ/; an INTERRUPTED SYLLABLE,

[4] The choice of symbols w and y reflects phonetic differences between these two vocoid spirants and the velar ones (**3.21**).

/ʔh/; and an INTERRUPTED CHECKED syllable, /ʔhʔ/: short free—/kwo^{21}/ *creek*; long free—/kwoh^{32}/ *hand*; short checked—/kwoʔ^{1}/ *church*; long checked—/kwohʔ^{13}/ *dirt*; interrupted—/kǫʔh^{1}/ *thy corncake dough*; interrupted checked—/huʔhʔ^{13}/ *our* (*incl.*) *cheeks*.

Any of the eight vowels, listed below, by itself constitutes a simple nucleus. /u/, /a/, or /e/ preceded by /i/; any vowel but /ü/ or /i/ followed by /i/; or (rarely) /u/, /o/, or /e/ preceded and followed by /i/ constitutes a complex nucleus. A sequence of vowels which in slow speech is interrupted by word or syllable juncture is sometimes spoken in fast speech as a complex vowel nucleus. The resulting nucleus, a part of the first word or syllable in the sequence, does not necessarily have /i/ as one of its vowels:

slow: /lih^{1} tsa^{4} ų^{4}+ŋi̱h^{3}+o^{1}−ʔh^{31}/ *we* (*excl.*) *can go ask*

fast: /lih^{1} tsą̱uh^{4} ŋi̱h^{3}+o^{1}−ʔh^{31}/

slow: /lih^{1} tsah^{31}+o^{1}−ʔh^{31}/ *yes, we* (*excl.*) *can go*;

fast: /lih^{1} tsaoh^{31}−ʔh^{31}/.

Though /a/ and /o/ have never been observed separated by syllable juncture in /ʔyiaoh^{343} sah^{43}/ *mother-in-law* and /tsaoh^{21} fahʔ^{21}/ *deaf-mute*, they are assumed on morphological evidence, to be in one syllable as 'fast speech' forms, and thus to belong here.

Complex peaks with two vowels may be short or long. Complex peaks with three vowels are always long (i.e. always have peak satellite /h/).

Chinantec vowels form a symmetrical three dimensional system with phonological constituents FRONT and BACK, HIGH and LOW, ROUNDED and UNROUNDED:

	Front		Back	
	Rounded	Unrounded	Rounded	Unrounded
High	ü	i	u	ï
Low	ö	e	o	a

Examples of each vowel and of complex nuclei, with and without peak satellite /h/, follow: /ʔih^{343}/ *corncake* (*stative*), /tih^{32}/ *thin*; /ʔuh^{343}/ *mirror* (*stative*), /tuh^{32}/ *tube*; /ʔïh^{313}/ *hammock*, /tïh^{32}/ *leg*; /ʔoh^{3}/ *mouth*, /toh^{32}/ *hole*; /ʔöh^{43}/ *my chicken*; /ʔah^{31}+mǫʔh^{31}/ *hello*, /tah^{32}/ *white*; /ʔeh^{43}/ *I teach*, /teh^{43}/ *I call* (*summon*); /tüh^{2}/ *blind*; /fu^{3}/ *powder*, /fuh^{3}/ *poor*; /to^{21}/ *bamboo*, /toh^{2}/ *brains*; /sï^{21}/ *glass*, /sïh^{3}/ *small poles*; /pa^{1}/ *bunch*, /pah^{423}/ *my bunch*; /tü^{2}/ *rifle*, /tüh^{2}/ *blind*; /he^{1}/ *spider*, /heh^{43}/ *I pant*; /tsa^{2}+lö^{2}/ *knock on*, /ʔöh^{43}/ *my chicken*; /ñi̱^{3}/ *salt*, /ñi̱h^{423}/ *my salt*; /dʸa^{21}/ *ten*; /dʸia^{2}/ *seven*, /dʸiah^{2}/ *twenty*; /gai^{12}/ *two* (*animate*), /gaih^{32}/ *three* (*animate*); /ʔ ya^{21}/ *fence*, /ʔyah^{423}/ *I puncture*; /ʔyia^{12}/ *day after tomorrow*, /ʔyiah^{32}/ *sunshine*; /siuihʔ^{14}/ *diarrhea*.

After a nasal consonant there is no nasal–non-nasal contrast; all peak nuclei after nasals are nasalized. /ö/, a rare vowel, has not been observed with nasalization. Nasalization is a constituent of the peak nucleus, not of the separate vowels: /huh^{4}/ *word*, /hų̱h^{4}/ *I burn*; /sïh$^{?32}$/ *moon*, /sï̱hʔ^{32}/ *wrinkle*; /ho^{1}/ *negative*, /hǫ^{1}/ *foam*; /tʸü^{3}/ *thigh*, /tʸǖ^{21}/ *four*; /ʔi^{2}/ *corncake*, /ʔi̱h^{4}/ *who*; /sahʔ^{32}/ *crab*, /są̱ʔ^{3}/ *take hold of*; /fehʔ^{1}/ *big* /sǫh^{3}+mǫh^{3}/ *there are . . .* (*animate*); /ʔöh^{43}/ *my chicken*; /taihʔ^{313}/ *difficult*, /nǫ^{3} tą̱i̱h^{3}/ *there he is*; /tʸiahʔ^{313}/ *ixtle*, /nç^{4}+tʸi̱ą̱^{423}/ *I'll go get. . . .*

A tone pattern in a normal syllable contains from one to three TONE PHONEMES (TONES). There are four tones in Chinantec. In our notation they are indicated by superscript numbers following the syllable of which they are a part, from ^{1}(low) to ^{4}(high).

The permitted tone patterns and their distributions in syllable types are shown by the following table:[5]

[5] Further work on the grammar is expected to reveal some additional two and three-tone patterns. This table does not provide for all of the tone patterns in forms sometimes spoken as normal syllables in fast speech but normally spoken as extended syllables.

short free	long free	short checked	long checked	inter-rupted	inter-rupted checked
1	1	1	1	1	
2	2	2		2	
3	3			3	
4	4	4	4	4	
12	12				
		13	13	13	13
	14				
21			21	21	
	32		32	32	
31				31	
				41	
43	43			43	
	313		313		
	343				
	423				

Various limitations on co-occurrence of tone patterns with specific types of syllables are seen from the table. The permitted co-occurrences are summarized with examples in the following paragraphs:

A short, long, or interrupted syllable occurs with any one-tone pattern: /ñį^{1}/ *thread*, /ñį^{2}/ *pig*, /ñį^{3}/ *salt*, /ñį^{4}/ *iron*, /mǫh^{1}/ *bone*, /nąh^{2}/ *yellow*, /nąh^{3}/ *Ignacio*, /mih^{4}/ *valley*, /toh^{1}/ *grinding stone*, /toh^{2}/ *brains*, /huh^{3}/ *Julius*, /huh^{4}/ *word*, /tʸi$^{?}$h^{1}/ *your*, /hla$^{?}$h^{2}/ *I loosen*, /tʸü$^{?}$h^{3}/ *I cut*, /hu$^{?}$h^{4}/ *my cheek*.

Long checked syllables occur with one-tone patterns /1/ and /4/ only; short checked with /1/, /2/, /4/ only: /tuh$^{?1}$/ *vulture*, /toh$^{?4}$/ *a drop* (*of liquid*); /ku$^{?1}$/ *pain*, /hu$^{?2}$/ *cheek*, /hu$^{?4}$/ *pineapple*.

Interrupted checked syllables do not occur with a one-tone pattern.

Two-tone patterns occur in both short and long syllables. Three-tone patterns are limited to long syllables. Eight of the 12 theoretically possible two-tone patterns occur. Of the 36 theoretically possible three-tone patterns, only 3 have been observed. Long syllables occur with 7 of the 11 patterns of more than one tone; each of the remaining syllable types with less than 7. Rising two-tone patterns have initial tone /1/:

Short free syllables: /gai^{12}/ *two* (*animate*), /hñį^{21}/ *veins*, /ŋį^{31}/ *vegetable pear*, /ñį^{43}/ *his salt*.

Long free syllables: /loh^{14}/ *nopal*, /tǫh^{12}/ *thorns*, /toh^{32}/ *hole*, /toh^{43}/ *my banana*, /teh^{313}/ *frog*, /sih^{343}/ *I shave*, /tǫh^{423}/ *my bird*.

Long checked syllables: /toh$^{?13}$/ *sand*, /tüh$^{?21}$/ *breast*, /toh$^{?32}$/ *charcoal*, /fih$^{?313}$/ *image*.

Interrupted syllables: /kwo$^{?}$h^{13}/ *church* (*stative*), /hla$^{?}$h^{21}/ *he loosens*, /lo$^{?}$h^{31}/ *you will buy*, /fi$^{?}$h^{32}/ *milk* (*stative*), /lo$^{?}$h^{41}/ *buy* (*imperative*), /hu$^{?}$h^{43}/ *pineapple* (*stative*).

Interrupted checked syllables: /ho$^{?}$h^{13}/ *our* (*incl.*) *fists*.

2.22. Every peak satellite that occurs in the extension of extended syllables, except one, occurs also in normal syllables. The exception is an extension-initial satellite /$^{?}$/, as in /hï$^{1?-1}$/ *thy fire*, that occurs only in slow speech.

The arrangements of peak satellites in kernels and extensions are as follows: V—$^{?}$h /kwo^{1}—$^{?}$h^{1}/ *thy hand*; Vh— /kuh^{2}—^{1}/ *thy money*; Vh—$^{?}$ /kuh^{1}—$^{?1}$/ *your money*; Vh—$^{?}$h /kuh^{31}—$^{?}$h^{31}/ *our* (*excl.*) *money*; V$^{?}$— /hï$^{1?-1}$/ *thy fire* (*slow speech*) (cf., in normal speech, /hï$^{?}$h^{1}/); V$^{?}$—$^{?}$ /ho$^{?1}$—$^{?3}$/ *our* (*incl.*) *fists* (*slow speech*) (cf., in normal speech, /ho$^{?}$h$^{?13}$/); V$^{?}$—$^{?}$h /ho$^{?1}$—$^{?}$h^{31}/ *our* (*excl.*) *fists*; Vh$^{?}$— /kwoh$^{1?-1}$/ *thy hand* (*slow speech*).

Syllable juncture contrasts with extension juncture: /kwo^{1}—$^{?}$h^{1}/ *thy hand* vs. /kwo^{1}+o$^{?}$h^{1}/ THY *hand*, /mǫh^{1}—$^{?}$h^{31}/ *thy bone* vs. /mǫh^{1}+o$^{?}$h^{31}/ THY *bone*, /kuh^{31}—$^{?}$h^{31}/ *thy money* vs. /kuh^{31}+o$^{?}$h^{31}/ THY *money*.

A form usually spoken as a normal interrupted syllable, as /hï$^{?}$h^{1}/ *thy fire*, is often spoken in slow speech as an extended syllable, as /hï$^{1?-1}$/. In a form normally

spoken as an extended syllable with a short kernel and an interrupted extension, as /fi^{1}−?h^{1}/ *thy boss*, the extension juncture may shift in slow speech to lengthen the kernel and shorten the extension (i.e., satellite /h/ moves from the extension to the kernel), as /fih^{1}?−^{1}/.

A form normally spoken as a long free kernel followed by a short extension with a one-tone pattern is sometimes a normal syllable in fast speech: /kuh^{2}−^{1}/ *thy money*, /kuh^{21}/ (fast speech). Conversely, a form usually spoken as a long normal syllable, especially if it has a three-tone pattern, is sometimes, in very slow speech, pronounced as an extended syllable with a long free kernel and short extension: thus /kwoh?^{213}/ *our* (*incl.*) *hands*, but in very slow speech /kwoh^{31}−?^{3}/. Note that the whole tone sequence in such forms is the same whether spoken as an extended or as a normal syllable.

The following examples, including both normal and extended syllables, give an idea of the variety of peak satellites and tone patterns that are found for a single onset and vowel nucleus:

/to^{3}/ *work*, /to^{21}/ *bamboo*, /toh^{1}/ *grinding stone*, /toh^{2}/ *brains*, /toh^{4}/ *I roast*, /toh^{32}/ *banana* or *hole*, *hollow*, /to?^{2}/ *honey*, /toh?^{13}/ *sand*, /toh?^{21}/ *fall down*, /toh?^{4}/ *a drop*, /toh?^{32}/ *charcoal*, /to?h^{3}/ *honey* (*stative*) or *I put into*, /toh^{1}−^{1}/ *he roasts*, /toh^{1}−^{3}/ *grinding stone* (*stative*), /toh^{2}−^{1}/ *thy grinding stone*, /toh^{2}−^{13}/ *brains* (*stative*), /toh^{3}−^{43}/ *his grinding stone*, /toh^{32}−^{3}/ *banana* (*stative*), /toh^{32}−^{32}/ *his banana*, /toh^{4}−^{2}/ *my grinding stone* or *thou roastest*, /toh^{1}−?^{1}/ *your grinding stone*, /toh^{23}−?^{1}/ *you roast* or *your banana*, /toh^{31}−?^{3}/ *our* (*incl.*) *banana* or *our* (*incl.*) *grinding stone*, /toh^{42}−?^{3}/ *we* (*incl.*) *roast*, /to^{1}−?h^{3}/ *sand*, /to^{1}−?h^{32}/ *thy banana*, /to^{3}−?h^{23}/ *charcoal* (*stative*), /to^{4}−?h^{43}/ *a drop* (*stative*), /toh^{42}−?h^{31}/ *we* (*excl.*) *roast*, /toh^{31}−?h^{31}/ *our* (*excl.*) *banana* or *our* (*excl.*) *grinding stone*, /tǫ^{1}/ *shaggy* or *bird*, /tǫ^{31}/ *two*, /tǫ^{43}/ *his bird*, /tǫh^{12}/ *thorns*, /tǫh^{13}/ *bird* (*stative*), /tǫh^{313}/ *dumb*, /tǫh^{423}/ *my bird*, /tǫh^{1}/ *thy bird*, /tǫh^{13}−^{3}/ *thorns* (*stative*), /tǫh^{31}−^{3}/ *dumb* (*stative*), /tǫh^{1}−?^{1}/ *your bird*, /tǫh^{13}−?^{1}/ *you fix*, /tǫh^{31}−?^{3}/ *our* (*incl.*) *bird*, /tǫh^{13}−?^{3}/ *we* (*incl.*) *fix*, /tǫ^{1}−?h^{3}/ *I fix*, /tǫ^{1}−?h^{32}/ *thou fixest*, /tǫ^{1}−?h^{31}/ *he fixes*, /tǫh^{13}−?h^{31}/ *we* (*excl.*) *fix*, /tǫh^{31}−?h^{31}/ *our* (*excl.*) *bird*.

3. This section gives some of the articulatory-acoustic details of the phonological units that have been described (**2**). The descriptions here are largely impressionistic, not intended to be physiologically or acoustically precise.

3.1. The following sections discuss BORDER and NON-BORDER features separately. They are, however, collectively the phonetic features of the phonemic junctures (word, syllable, and extension), which characterize and delimit the units to which they belong (**2.1**).

3.11. Word juncture within a phrase is marked by a diminuendo, followed by a quick crescendo. It may be accompanied by a pause. There may also be a slight lengthening or drawing out of the end of the word before the juncture. In /?ịh^{1}+nạ^{3} höh^{42} kǫh^{32} ụ^{1}+?ö^{1} feh?^{1}/ *I want to see a big tamale*, the vowel of /kǫh^{32}/ decreases in intensity toward the end of its articulation and is followed by a quick crescendo on the /ụ/ of /ụ^{1}?ö^{1}/.

Syllable juncture within a word is marked by a slight lengthening or drawing out of the end of the preceding syllable; but there is less diminuendo, when any, than at word juncture. There is never any pause between syllables within a word. The crescendo at the beginning of a non-word-initial syllable is less sharp, and perhaps more gradual, than at word initial. The vowel of /kǫh^{1}/ in /?ịh^{1}+nạ^{3} höh^{42} kǫh^{1}+o?h^{31} feh?^{1}/ *I want to see thy large corncake dough* (compare the example in the preceding paragraph) sounds drawn out, with perhaps some diminuendo, followed by a slight crescendo on the beginning of /o?h/.

Sometimes an onset consonant is the

only signal of syllable or word juncture. In a sequence of two syllables, or of two words, or of a kernel and extension, it is not always possible to determine whether an intervocalic /ʔ/ belongs to the first or second; impressionistically it sometimes seems to go with both.

Sometimes word juncture is distinguished from syllable juncture only by the location of stress.

Extension juncture does not involve any lengthening or diminuendo but is marked by a slight attenuation on the kernel followed by a quick increase and decrease in loudness, heard as a PULSE, at the beginning of the extension. The pulse is heard as lighter than the crescendo of syllable or word juncture.[6] Though the pulse is often very light it is audible.[7] It is less noticeable when other material follows in the same utterance than when near the end of an utterance.[8] In /ʔjh¹+nąˢ hõh⁴² kǫh³¹−ʔh³¹ feh⁷¹/ *I want to see our* (*excl.*) *corncake dough*, the vowel of the kernel of /kǫh³¹−ʔh³¹/ is slightly attenuated toward the end, followed by a slight pulse on the peak of the extension.

Tone patterns (**3.3**) may reinforce or weaken border features:

(1) The pulse at an extension juncture sounds stronger when accompanied by a rise of more than one tone step (e.g. /1/ to /3/), as in /toh¹−³/ *grinding stone* (*stative*), as compared with a form like /ʔoh³−³/ *fruit* (*stative*).

(2) The increase in loudness following juncture is greater on a short syllable (or extension) with a falling tone pattern, as in /ʔoh³−³²/ *his mouth*.

An extension with tone /1/ frequently includes a slight initial dip in pitch: /sĩ²−ʔh¹/ *thy clothes*, /ʔih⁴−ʔ¹/ *your corncakes*, /kwa¹−ʔh¹/ *thy arms*, /kwoh¹−ʔ¹/ *your hands*.

The vowel color in an extended syllable is determined by its kernel vowel pattern (**2**): /kwo¹−ʔh¹/ [kwu əʔə] *thy hand*. A phonetic diphthong (which phonemically may be a single vowel or a vowel cluster) reaches its final coloring at or immediately after extension juncture: /ʔih³¹−ʔh³¹/ [ʔei iʔi] *our* (*excl.*) *corncakes*, /ʔih⁴−ʔ¹/ [ʔe: iʔ] *your corncakes*. In a similar two syllable sequence, however, the vowel color is determined by the onset and peak satellite environment in each of the syllables, as in /kwo¹+oʔh¹/ [kwuᵒ+əʔə] *thy hand*.

Sometimes onset consonant, change of vowel, or change of nasality is the only thing that distinguishes a syllable juncture from an extension juncture. In a taped utterance of /fih³²ʔ−³ ʔah³+nąˢ/ *I have an image*, the feature which marks the second word as containing two syllables rather than one extended syllable is the onset /n/. Otherwise, rhythm and border characteristics of the two words sound the same. In some utterances of /kǫh³¹+oʔh³¹/ *you will carry*, the cessation of nasality signals the syllable juncture. The lack of nasalization in the second syllable of /kǫh³¹+oʔh³¹/ *you will carry* distinguishes it from /kǫh³¹−ʔh³¹/ *our* (*excl.*) *corncake dough*.

In some cases it is impossible to distinguish between an extended syllable and a two syllable word.

Procedurally, borders in a given utterance are frequently easier to identify when the utterance is whistled than when spoken.

3.12. There is a WORD STRESS (**2**), the placement of which, on the basis of the evidence so far observed, seems to be predictable when the borders and the phonemic content are known. Word stress seems

[6] These phonetic features of word, syllable, and extension juncture probably differ not in kind but in degree and in specific concatenations. For a discussion of syllables in physiological terms see Stetson (1951) and Pike (1955).

[7] The writer and two other investigators, working with an informant, were able to identify the extension juncture with a high degree of agreement. Probably 250 forms, most of them extended syllables, were judged. Nevertheless, it seems impressionistically that extension juncture is sometimes signalled only by extra length of the peak vowel.

[8] This may be relevant to phrase rather than to utterance boundary (see **2.**).

normally louder than the crescendos and pulses described for word, syllable, and extension borders. Not every word of an utterance is equally stressed. The differences are presumably related to the phonological phrase, not discussed here (see **3.32** for the interplay of stress and tone).

The first long syllable in a word is normally stressed: for example the second syllable in /ɥ⁴+ŋ̈ih³+ðuh¹²/ *I'll ask*. If there is no long syllable, a short syllable with a tone glide is stressed: the second syllable of /ɥ⁴+hnÿ²¹/ *beans*. In the absence of either of these, stress falls on whichever of the first two syllables carries the higher tone: thus on the first syllable of /ʔi⁴+ñj²¹/ *bread*, but on the second syllable of /hmj̈³+ñj²⁴/ *sea*. In words with no long syllable, no tone glide, and identical tones on the first two syllables, the second syllable is stressed: /ti¹+ʔö¹/ *singer*.

The relative durations of normal syllables is described in **3.22**.

An extended syllable, such as /kwo¹−ʔh¹/ *thy hand*, seems to be squeezed into a shorter time span than a two-syllable sequence with comparable onsets and peaks, such as /kwo¹+oʔh¹/ THY *hand*.

An extended syllable with a long kernel and a short checked extension, as /ʔih⁴−ʔ¹/ *your corncakes*, is approximately four times as long as a normal short syllable. The kernel is about three times as long as the extension.

3.2. The articulatory-acoustic features of onsets and peaks are described here only insofar as they vary from the approximate norms implied by the tabular presentation.

3.21. Initial voiced stops are prenasalized: [mb−] in /buʔ⁴/ *donkey*, [nd−] in /du¹−ʔh³/ *I will drink*, [n̄dʸ−] in /dʸa²¹/ *ten*, [ŋg−] in /go²¹/ *bad*. /g/ is also prenasalized after /h/ (but not after /ʔ/); thus /hgoh¹ tǫ³/ *arrive again* has [ŋ̈ŋg−].

/f/, as in /fu³/ *powder*, may be bilabial or labiodental, but without contrast.

/s/ is grooved and slightly retroflex: /soh³/ *incline*.

/r/ has two allophones. One, a voiced dental trill, occurs before a front unrounded vowel: /ri¹+xa¹/ *lying down*. The other, a voiced counterpart of /s/ (as described immediately above), occurs in all other positions: /roh³²/ *tobacco*.

The labial and palatal voiced spirants, /w, y/, also have nonfricative vocoid allophones. Though there is some fluctuation between the allophones of /w/, it is usually [w] in /kw/, as in /kwih²/ *cold*; in /ʔw/ before a back vowel, as in /ʔwo²/ *soft*; and initially before /o/, as in /wo⁴/ *John*. Elsewhere /w/ is usually [β]: /wu¹/ *black widow spider*, /ʔwiʔ¹/ *black*, /wjh¹²/ *far*.

/y/ is usually nonfricative in /ʔy/: /ʔyiah²/ *day after tomorrow*. Elsewhere it fluctuates as to amount of friction, though there is likely to be more before /ü/, as in /yüh²¹³/ *old*, or before nasalized vowels, as in /yi̯ąh²/ *swollen*; and less elsewhere, as in /ya⁴/ *Mary*.

Onset /h/ is the voiceless counterpart of the phone it precedes: /hmǫh⁴/ *I do*; /hnjh¹²/ *fog, cloud*; /hñüj̈²¹/ *hair*; /hŋǫ⁴−ʔh³/ *I kill*; /hlöh²¹³/ *measles*; /hi³¹/ *book*; /hi²¹/ *fire*; /höh⁴/ *I see*; /hu⁴/ *mosquito*; /hoh²/ *split, break*; /ha²+lj̈h³²/ *arrive*; /he¹/ *spider*. Note /hgoh¹ tǫ³/ *arrive again*, [ŋ̈ŋg−].

In /ʔy/ and /ʔw/, the articulation of the two constituents is nearly simultaneous, so that either of these is often hard to distinguish from simple onset /ʔ/: /ʔya⁴/ *adz*, /ʔwo²/ *soft*.

3.22. Of the eight vowels, six are more or less diphthongal: The arrows in the diagram (See Figure 1) show that six of the vowels, in at least some of their articulations, are pronounced with a glide toward or from a more central position. The extent of the glide is roughly indicated by the length of the arrow. The closed curve around each symbol indicates roughly the range of vowel color of allophones of the vowel in question. In the following discussion, the vowel colors described are those of monophthongal allophones and those of the most prominent points in diphthongal allophones.

A monophthongal allophone of /i/ oc-

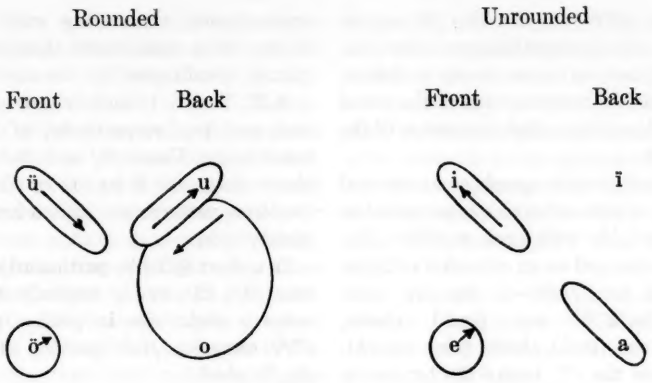

FIGURE 1

curs after a palatal or after another vowel in the same syllable: /ñi⁴/ *metal* /feih?¹/ *large* (*animate*). Elsewhere /i/ is diphthongal. The amount of glide is greater with length, as in /fih?¹/ *blackberry*; with nasalization, as in /ni̯⁴/ *on top of*, /nih?¹³/ *I'm going home*; and after a laryngeal, as in /hi³¹/ *book*, /?i̯¹/ *paint*. The glide is least in a short non-nasalized peak: /li⁴/ *flower*.

/e/ is [e] before /i/, as in /feih?¹/ *large* (*animate*); [æ] when nasalized, as in /hnɛ̨h²+ mɛ̨³/ *it's visible*; otherwise [ɛ]: /feh?¹/ *large* (*inanimate*). /ei/, as in /feih?¹/ *large* (*animate*), is sometimes difficult to distinguish from /i/, as in /fih?¹/ *blackberry*. Both are diphthongs which can be roughly sketched as [ei], though in /i/ the first part of the diphthong is generally less prominent than in /ei/.

/ü/ is monophthongal [v̈ˀ] after palatals: /xüh⁴²/ *I blow*; diphthongal [ʉɣ̈ˀ] elsewhere: /tü²/ *rifle*, /tüh⁴²/ *I abandon*.

/ö/ is mid, quite tense, with little rounding. It is relatively less advanced than the other front vowels: /?öh⁴³/ *my chicken*.

/u/ is diphthongal after /h/, /n/, /?/; /huh⁴/ *word* /nuh⁴/ *I listen*, /?uh⁴²/ *I enter*; usually monophthongal elsewhere: /tu²¹/ *chicken*, /kuh³/ *money*.

A diphthongal allophone of /o/, [uᵒ], occurs after labials: /fo²¹/ *ashes*, /poh⁴²³/ *I clear the land*, /mɔ̨h?²¹/ *mountain*, /kwoh³²/ *hand*. Elsewhere /o/ fluctuates between [o] and [ɔ]. It is more likely to be [o] after a dental or /?/: /loh³¹³/ *lime*, /?oh³/ *mouth*. It is more likely to be [ɔ] after a velar or /h/, as in /go²¹/ *ugly*, /hoh²/ *split*, *break*; in a peak with satellite /-?h/, as in /ho⁴ lo?h³¹ . . ./ *will you buy . . .* ?; and when nasalized, as in /?ɔ̨²/ *bridge*.

/a/ is [ə] in short unstressed peaks, as in /?jh³²+nɑ̨³ . . ./ *I want . . .* ; otherwise [a]: /pa¹/ *bunch*.

In syllables with onset /m/, /?m/, or /hm/, /ï/ is the syllabicity of [m̩]: /m̩ïh³²/ [m̩ː] *sandal*, /?m̩i̯?²/ [?m̩?] *cloth*. Otherwise /ï/ is [iˣ] in unstressed position, as in /xüh⁴+ ɣï⁴/ *less*; and [i] in stressed position, as in /tïh³/ *foot*.

Peak satellite /h/ is length of syllable peak. We give below a list of five peak patterns, arranged phonetically from shortest to longest. Length is indicated phonetically in terms of a short single-vowel peak, [V]. [ᵛ] indicates slightly more than ½ the length of [V]. Colon indicates twice the length of [V]. A long checked syllable is normally slightly shorter than a long free syllable:

/V/ [V] /dʸa²¹/ *ten*; /VV/ [Vᵛ] /dʸia²/ *seven*; /Vh/ [V:] /?yah⁴²³/ *I'll puncture*; /VVh/ [V:V] /dʸiah³²/ *twenty*; /VVVh/ [VVV] /siuih?¹³/ *have dysentery*.

Peak satellite /?h/ is normally glottal catch followed by rearticulation of the peak

vowel, as in /hï?h¹/ *thy fire*. The /?/ may be very light, with laryngealization of the peak vowel; or it may be more clearly a closure, in which case the rearticulation of the vowel may be replaced by a slight retention of the glottal catch.

In slow and precise speech or at the end of a phrase, a form otherwise pronounced as a normal syllable with peak satellite /?h/ may be pronounced as an extended syllable: /hï?h¹/ *thy fire*, /hï¹?—¹/ *thy fire* (*slow speech*), /hu?h?¹³/ *our* (*incl.*) *cheeks*, /hu?¹—?³/ *our* (*incl.*) *cheeks* (*slow speech*). In such cases the /?/ before the hyphen is more deliberate than in an interrupted syllable, but still light and with laryngealization of the preceding vowel.

An interrupted syllable resembles a two-syllable word with /V+?V/, as in /tï¹+?ö¹/ *singer*, in that both include a sequence [V?V]. In /V+?V/, /?/ is longer than in an interrupted or extended syllable (as described immediately above), and there is no laryngealization of the preceding vowel.

3.3. Occurrences of the same tone in different patterns cannot be equated in absolute phonetic terms, their phonetic nature being conditioned by the surrounding tones in the pattern. The following description is limited to the tone patterns observed on normal syllables. Allophonic variation of tones in extended syllables seems to be similar.

The pitch of a form often sounds quite different when whistled than when spoken. The writer has found, however, that once he has heard a form whistled, he can identify the same pitch characteristics in at least some of the subsequent spoken utterances. This has been of considerable help in identifying subtle pitch distinctions.

A tone pattern often sounds quite different in different environments. Such differences were at first assumed to represent different tones (implying the presence of tonal morphophonemics). Careful listening in an effort to determine the differences, however, reveals a similar basic pitch pattern in each environment, contrasting with other patterns. Thus most such changes are allophonic, conditioned by the environment.

3.31. Tones /1/ and /4/ are near the bottom and top, respectively, of the normal voice range. Tones /2/ and /3/ are usually closer than /3/ is to /4/ or /2/ is to /1/. One-tone patterns are seldom heard as completely level.

In a short syllable, particularly if checked, tone /1/, /2/, or /3/ typically seems to involve a slight rise in pitch: /pa¹/ *bunch*, /?i²/ *corncake*, /fu³/ *powder*, /ku?¹/ *pain*, /hu?²/ *cheek*.

Except in a short checked syllable, /4/ often falls in pitch. The fall is sharp in a short syllable, as in /ñj⁴/ *iron*; slight and toward the end (that is, preceded by a level phase) in a long syllable; /huh⁴/ *word*, /hụh⁴/ *I burn*. In a long syllable, the drop in pitch is less likely to be noticed when the syllable is checked than when free. A syllable with tone /4/ often carries heavier stress than one with any other one-tone pattern. /4/ is sometimes difficult to distinguish from /43/. Both start high and glide to a lower pitch. The drop in /4/, however, is nearer the end of the syllable and slower than that in /43/: /mjh⁴/ *valley*, /?ih⁴³/ *my tortilla*.

/3/ in a long syllable is sometimes heard as rising in pitch, but is more likely than any other tone to be heard as level: /fuh³/ *poor*, /sïh³/ *small poles*.

/2/ in a long free syllable becomes slightly louder toward the end, often with a slight terminal rise and fall of pitch: /toh²/ *brains*, /tüh²/ *blind*.

/1/ in a long free syllable often seems to fall slightly, but sometimes rather to rise slightly: /mọh¹/ *bone*. In a long checked syllable it frequently seems to rise: /feh?¹/ *large* (*inanimate*), /tuh?¹/ *vulture*.

In general, one-tone patterns in interrupted syllables are slightly higher in pitch, and are accompanied by slightly heavier stress, than the same patterns in other types of syllables.

The pitch on a checked syllable tends to be slightly higher than that on a free syllable of the same tone: /ñį²/ *pig*, /hu?²/ *cheek*.

The line diagrams (See Figure 2) summarize the statements made above about pitch allophonics of the one-tone patterns:

A one-tone pattern will alternately sound the same in pitch as, higher than, and lower than the same pattern in a contiguous syllable. We assume that the difference relates to the portion of the pattern on which the investigator's attention is for the moment focused. The pitch glides, as shown in the line diagrams, are very subtle and the listener may hear the pitch of a portion of the pattern as that of the whole. Thus the portion of the pattern on which the listener is focusing, both in the syllable in question and in the frame, determines whether two adjacent phonetically identical patterns will sound the same or not. This explanation seems to be borne out when attempting, in successive utterings, to focus attention on the beginning, end, and middle of the pattern.

3.32. The statements which follow are general indications of the phonetic nature of tone combinations in normal syllables.

Glide characteristics of single tones tend to disappear in syllables with more than one tone.

Variations in pitch tend to be confined within a narrower and lower register in phrase-final syllables than in others. Especially, syllable-final rises in phrase-final tend to be much less pronounced than phonemically identical rises in non-final syllables: compare /... teh³¹³ .../ *frog*, in which the final pitch is approximately the same as the initial, and /... teh³¹³/ *frog*, in which the final rise in pitch is barely perceptible.

Falling patterns in short syllables are accompanied by relatively heavy stress: /hñį²¹/ *veins*, /ŋį³¹/ *vegetable pear*. This stress often seems to be the phonetic difference between a one-tone pattern and a falling pattern beginning with the same tone, both in short syllables, as /ñį⁴/ *iron* vs. /ñį⁴³/ *his salt*.

In patterns of two tones, rises in pitch tend to occur nearer the beginning of the syllable and falls nearer the end: /tǫh¹²/ *thorn*, /toh³²/ *hole*.

In a three-tone pattern with a fall followed by a rise, the rise is usually very close to the end: /loh³¹³/ *lime*. A rise followed by a fall in a three-tone pattern is usually near the middle: /sih³⁴³/ *I shave*.

A sharp rise in pitch (more than one tone step in a two-tone pattern) gives the impression of a pulse, almost a rearticulation of the vowel: /toh?¹²/ *sand*, /loh¹⁴/ *nopal* (a type of cactus) (**3.11**). This pulse may be louder than that at extension juncture, as in /tĩh²⁴—?¹/ *your feet*. In this example the pulse in the kernel is like that accompanying any sharp rise of pitch; the second pulse is a feature of extension juncture only, unrelated to pitch.

Complex patterns in long syllables occupy a wider register than the phonemically identical patterns in short syllables.

The pitch of the first tone of a pattern tends to be higher in direct proportion to the number of successive tones in the pattern.

The tones of stressed syllables tend to be of relatively higher pitch than those of unstressed syllables; conversely, allophonically higher contours tend to be accompanied by

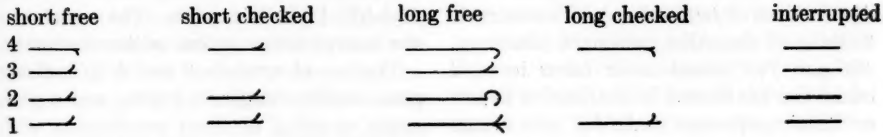

FIGURE 2

heavier stress than allophonically lower contours.

4. Alternate analyses are possible in certain onsets and peaks, for the syllabic nasal, and for tone.

4.1. Palatal onsets could be reinterpreted as dentals plus /y/. This would entail recognizing one three-consonant onset, /*ʔny/, as in /ʔña²¹/ *five*.

Voiced stops could be reinterpreted as nasal plus (otherwise voiceless) stop. Since /ʔg/ is [ʔg], without nasalization, some special treatment would be required: e.g., /ʔk/ with the /k/ voiced also in this environment, or /ʔɣ/ with the /ɣ/ non-spirantal in this environment. Also, one onset of three consonants would result, /*hŋk/ [hŋg], as in /hgoh¹tǫ³/ *arrive back*. Since the nasal onglide is slight, and since contrast of voicing is functional for the spirants, the proposal seems of little value.

Inasmuch as /s/ and [ʐ] (one of the allophones of r) differ only by voicing, /r/ and /s/ might be interpreted as a voiced-voiceless pair. Though the evidence for our interpretation is not compelling, the voiced spirant and trill phones in the dental position are in complementation and clearly members of one phoneme. This justifies considering /r/ as different from /s/ by more than voicing. While /s/ fits the consonant system as the voiceless spirant, the presence of /ð/ interferes with our regarding /r/ (or*/z/ if the alternate interpretation were accepted) as its voiced counterpart.

/w/ and /y/ are quite different from /ð/ and /ɣ/, both in articulation and distribution, and could be classed separately as semivowels. The former have vocoid allophones (**3.21**); the latter are always spirantal. The distributions of /w/ and /y/ are comparable to those of the other consonant phonemes. /ð/ and /ɣ/ almost never occur in word initial and are limited in distribution to two or three morphemes each. /ɣ/ also occurs in morphophonemic alternation with /k/. Nevertheless, all four are spirantal at least some of the time, and accordingly can be regarded as a set of voiced spirant consonants.

The evidence for treating /ts/ and /kw/ as unit phonemes or as clusters is about evenly weighted. They occur as onsets with a distribution parallel to that of single consonant onsets. On the other hand, they do not fit neatly as units into the rather symmetrical consonantal system, and each of the segments involved occurs singly as an onset. Somewhat arbitrarily, we treat them as clusters, as least in notation.

4.2. Most of the diphthongal allophones of vowels could be reinterpreted as vowel sequences, each consisting of /a/ and another vowel. Thus [uə] would be */ua/; [əu], */au/: [üv̆], */üa/. As vowel sequences, however, these diphthongs would be in complementation with monophthongal vowels relative to the onsets they can follow: */ua/ with /o/; */au/ with /u/; */üa/ with /ü/. /au/, which in our interpretation does occur in fast speech, is pronounced with the lower allophone, [a], of /a/.

Since [uə] is phonetically more similar to /u/ than to /o/, it would seem reasonable to interpret it as containing /u/. It is, however, in complementation with the other allophones of /o/ and in contrast with /u/: /fo²¹/ [fuᵊ] *ashes*, /fu³/ [fu] *powder*, /kwoh³²/ [kwuə] *hand*, /kwuh³²/ [kwu:] *cornfield*.

Vowel clusters in normal speech could be reinterpreted as /yV/, /Vy/, or /yVy/. This interpretation would result either in a sequence of two phonetically different /y/'s, the first barely perceptible and the second sometimes receiving the peak of syllabicity, or else would entail setting up /ʔy/ as a unit phoneme (see **4.1**): /ʔya²¹/ *fence*, /ʔyah⁴²³/ *I'll puncture*, /ʔyia¹²/ *day after tomorrow*, /ʔyiah³²/ [ʔyi:a³²] *sunshine*. The vowel cluster interpretation makes neither necessary.

The use of symbols ʔ and *h* to indicate peak satellites implies a pairing and a phonemic equating of these constituents with onset consonants /ʔ/ and /h/. The onset and peak constituents are in complementation.

The laryngeal consonants have parallel distributions in onsets but do not there pattern like any of the other consonants. This makes these the logical consonants to pair with the syllable peak constituents. Phonetically, onset and peak /ʔ/ are quite similar while onset and peak /h/ are quite different. The writer is not convinced that it is valid to pair these peak constituents with any onset consonants. Therefore the use of *ʔ* and *h* to symbolize peak constituents is to be taken as an orthographic convenience, not necessarily implying their identification with any onset consonants.

One might consider interpreting vowel length as a feature of individual vowels rather than of whole peaks. However, most peaks pair off as long and short—the diphthongal ones as well as the monophthongal. When the informant whistles an utterance, long syllables have about the same length regardless of whether they have a single vowel, two, or three vowels.

4.3. /mį̄/ could be reinterpreted as /m/, a syllable remainder consisting of an onset with no peak. Our interpretation is based on the parallel functions of [m̩] and the usual consonant-vowel sequences. Also, while nonsyllabic /m/ precedes five of the vowels, /a, e, i, o, u/, it does not precede /ï/, /ü/, or /ö/: /maḥ[12]/ *liquor*, /moh[1]/ *bone*, /miḥ[4]/ *valley*, /muiḥ[14]/ *Raymond*, /meh[14]+na[3] ʔñiẹʔh[43]/ *I'll hide myself*.

The choice of /ï/, rather than /ü/ or /ö/, as the vowel in /mį̄/ is perhaps partly arbitrary. It is influenced by neighboring dialects of Chinantec, which have the sequence [mį̄] in cognates of nasal words in the Quiotepec dialect, and which do not have syllabic nasals.[9] The movement of the jaw and throat, frequently observable during the pronunciation of nasal syllables with long peaks, adds articulatory evidence for the interpretation. Chinantec seems to make more extensive use of syllabic nasals (phonetically speaking) than any other language so far reported. Chinantec nasal words have all the variety of structure of words with ordinary peaks as the list below shows. Bella Coola (Pike 1955, p. 70) has words with no distinctive vowels, but they are pronounced with voiced or voiceless vocoid releases. Other languages have occasional nasal syllables: Senadi, Chiricahua, Bella Coola,[10] Huichol (Grimes 1958). Cantonese[11] has, at least in theory, entire utterances with nothing more syllabic than a nasal. Compare with these instances the variety displayed here, to which other paradigms could be added:

/mį̄ʔ/ *thick* (*as a tree*), /mį̄h[43]/ *I ask for*, /mį̄h[32]/ *sandal*, /mį̄h[313]/ *tick*, /mį̄ʔ[3]/ *pill*, /mį̄hʔ[32]/ *snake*, /ʔmį̄ʔ[2]/ *cloth*, /ʔmį̄h[3]/ *new*, /ʔmį̄hʔ[13]/ *underbrush*, /hmį̄ʔ[2]/ *tomato*; /hmį̄[1]/ *blood*, /hmį̄h[423]/ *my blood*, /hmį̄ʔh[1]/ *thy blood*, /hmį̄[43]/ *his blood*, /hmį̄hʔ[313]/ *our* (*incl.*) *blood*, /hmį̄h[31]—ʔh[31]/ *our* (*excl.*) *blood*, /hmį̄h[1]—ʔ[1]/ *your blood*; /hmį̄h[32]/ *water*, /hmį̄h[43]/ *my water*, /hmį̄[1]—ʔh[32]/ *thy water*, /hmį̄h[2]—[43]/ *his water*, /hmį̄hʔ[313]/ *our* (*incl.*) *water*, /hmį̄h[31]—ʔh[31]/ *our* (*excl.*) *water*, /hmį̄h[24]—ʔ[1]/ *your water*; /mį̄h[43]/ *I ask for*, /mį̄ʔh[43]/ *thou askest for*, /mį̄[43]/ *he asks for*, /mį̄hʔ[313]/ *we* (*incl.*) *ask for*, /mį̄h[31]—ʔ[31]/ *we* (*excl.*) *ask for*, /mį̄h[41]—ʔ[1]/ *you ask for*; /ʔmį̄ʔh[43]/ *I pinch*, /ʔmį̄ʔh[31]/ *thou pinchest*, /ʔmį̄ʔh[21]/ *he pinches*, /ʔmį̄h[13]—ʔ[3]/ *we* (*incl.*) *pinch*, /ʔmį̄h[13]—ʔh[31]/ *we* (*excl.*) *pinch*, /ʔmį̄h[2]—ʔ[1]/ *you pinch*; /ʔi[2]/ *corncake*, /koh[43]/ *I play*, /loh[32]/ *skin*, /loh[313]/ *lime*, /poʔ[4]/ *ball*, /tuhʔ[1]/ *vulture*, /ʔmiʔ[2]/ *pimple*, /ʔlīh[313]/ *corpse*, /ʔloh[24]/ *hook*, /hlaʔ[2]/ *cheap*; /ñį[1]/ *thread*, /ñįh[423]/ *my thread*, /ñįʔh[1]/ *thy thread*, /ñį[43]/ *his thread*, /ñįhʔ[313]/ *our* (*incl.*) *thread*, /ñįh[31]—ʔh[31]/ *our* (*excl.*) *thread*, /ñįh[1]—ʔ[1]/ *your thread*; /tsih[32]/ *dog*, /tsih[43]/ *my dog*, /tsi[1]—ʔh[32]/ *thy dog*, /tsih[2]—[43]/ *his dog*, /tsihʔ[313]/ *our* (*incl.*) *dog*, /tsih[31]—ʔh[31]/ *our* (*excl.*) *dog*, /tsih[24]—ʔ[1]/ *your dog*; /koh[43]/ *I play*, /koʔh[43]/ *thou playest*, /ko[43]/ *he plays*, /kohʔ[313]/ *we* (*incl.*) *play* /koh[31]—ʔh[31]/ *we* (*excl.*) *play*, /koh[41]—ʔ[1]/ *you play*; /hïʔh[43]/ *I*

[9] At least two other more remote dialects of Chinantec, those of Usila and Mayultianguis, do have syllabic nasals.

[10] Hockett (1955: 57, 61, 120, 128).

[11] Information from C. F. Hockett.

shake, /hï$^{?h^{31}}$/ *thou shakest*, /hï$^{?h^{21}}$/ *he shakes*, /hĭh^{13}—$^{?3}$/ *we* (*incl.*) *shake*, /hĭh^{13}—$^{?h^{31}}$/ *we* (*excl.*) *shake*, /hĭh^{2}—$^{?1}$/ *you shake*.

4.4. A tone pattern might be interpreted as a constituent of the syllable peak rather than of the entire remainder. When the onset is voiceless, this is of course phonetically the case. But a voiced sonorant onset carries contrastive pitch. The initial tone of a pattern may occur entirely on a sonorant onset, sometimes with the result that the first tone of a pattern was at first missed by the investigator: /wɥh^{12}/ [βɥ:] *dish*.

The non-level character of one-tone patterns and the difficulty of equating the same tone in different patterns or twice in the same pattern in an absolute phonetic sense, suggests the possibility of a reinterpretation of Chinantec tone as a contour system. Each of the patterns listed in the table of permitted tone patterns would then be a separate tone phoneme. Thus each normal syllable, kernel, and extension would have one tone phoneme.

This alternative would obviate certain difficulties. One difficulty, under the treatment chosen, is that of identifying each of the parts of a pattern as one of four tone levels, which is especially difficult in view of the interplay of the phonetic properties of word, syllable, and extension juncture with features of tone. Another difficulty, related to the first, is that of predicting the precise phonetic shape a given tone sequence will have in a given environment.

The alternative interpretation, however, would result in fifteen tone phonemes in normal syllables (and some additional ones in kernels and extensions). This large a number of tone 'phonemes' seems unusual, if not improper, and urges finer-grained analysis. The hierarchical or immediate-constituent approach allows us to recognize the more than fifteen contrasting tone patterns as units within whole syllables, without forcing us to accept these units as indivisible. In spite of the difficulties mentioned above, each pattern can be interpreted as a sequence of one or more of just four tone phonemes, the relative pitches of which are conditioned by their environment.

ABSTRACTS AND TRANSLATIONS

1. Latin American publications abstracted by William Bright:

Vocablos de la Lengua Quinigua de los Indios Borrados del Noreste de México ("Words of the Quinigua Language of the Borrado Indians of Northeastern Mexico"). By Eugenio del Hoyo. Humanitas, Anuario del Centro de Estudios Humanísticos, Universidade de Nuevo León [Monterrey], año 1, no. 1 (1960), pp. 489–515. México.

In the course of historical researches in the Archives of the City of Monterrey, the author has compiled a list of over three thousand words from the extinct Indian languages of northeastern Mexico. Although confessing himself ignorant of linguistics, he here presents and attempts to analyze his material on the Quinigua language (which he also spells Guinigua). This was spoken by the Indians called Borrados or 'obliterated', because of their style of painting their features. Around fifty morphemes are tentatively isolated. The author discusses several alternatives for the classification of Quinigua, and expresses the hope that his data will permit specialists to make a decision.

[A comparison of del Hoyo's Quinigua with Swanton's and Hoijer's data on neighboring languages[1] reveals only a few obvious similarities: Quin. sarac, Tonkawa salak *deep*; Quin. carama, Comecrudo kla'm *dog*; Quin. anamo, San Francisco Solano namô *eat*; Quin. ama, Karanakawa am *fish*; Quin. amoca, Comecrudo mo'k, Cotoname esmo'k *pig*; Quin. ajo, Comecrudo a'x *tobacco*. Quin. am *earth* and ca *water* resemble forms in several Kokan languages, such as Chimariko ama *earth*, aqa *water*; but the nearest approaches among neighboring languages are Comecrudo kamla' *earth* and a'x̣ *water*.]

[1] John R. Swanton, Linguistic Material from the Tribes of Southern Texas and Northeastern Mexico, BAE-B 127 (1940); Harry Hoijer, An Analytical Dictionary of the Tonkawa Language, UCPL 5.1–74 (1949).

Fonémica del Ixcateco ("Phonemics of Ixcatec"). By María Teresa Fernández de Miranda. Instituto Nacional de Antropología e Historia, Dirección de Investigaciones Antropológicas, Publ. no. 3. 21 pp. México 1959.

Ixcatec is a member of the Popolocan family, along with Popoloca, Chocho, and Mazatec; it is spoken only in the small village of Santa María Ixcatlán, Oaxaca. All Ixcatec speakers also know Spanish, and use many Spanish loanwords; these are here described as an integral part of the language. The stops and affricates are voiceless /p t ȼ tʸ č k ʔ/, voiced / b d dʸ ǰ g/; of these, /b d g/ have fricative allophones. The other consonants are voiceless fricatives /f s š h/, nasals /m n ñ/, semivowels /w y/, and liquids /l r ř/. The vowels are /i e a o u/, plus the nasalized equivalents. The basic tonemes are high, low, and mid (marked by numbers /1 2 3/). In addition there is a "half-high" toneme of limited distribution, sometimes interchangeable with tone /1/; it is written /↓..1/. No intonational contrasts have been found. The distribution of Ixcatec phonemes is described in terms of the syllable, which contains one or two vowels (which may have different tones), preceded by from one to five consonants.

Linguistic Perimeters in Latin America. By C. F. Voegelin. Miscellanea Paul Rivet Octogenario Dicata, vol. I, pp. 197–208. XXXI Congreso Internacional de Americanistas, Universidad Nacional Autónoma de México. México, 1958.

Phonemic systems of some 50 Latin American languages are here surveyed from a typological point of view. Formulae are given to express vowel-consonant ratios and the internal structures of vowel and

consonant systems. It is noted that 'additive components' in the languages sampled (such as aspiration and palatalization) range from zero to two, and linear consonants from around a dozen to twenty-five; whereas the same features in North American Languages show ranges twice as great.

Ein von Walter Lehmann Gesammeltes Mexicano-Märchen und Vokabular (Mexicano de Chilapa, Staat Guerrero) ("An Aztec Story and Vocabulary Collected by Walter Lehmann (Aztec of Chilapa, State of Guerrero")). By G. Kutscher. Miscellanea Paul Rivet Octogenario Dicata, vol. I, pp. 533–72. XXXI Congreso Internacional de Americanistas, Universidad Nacional Autónoma de México. México, 1958.

Published here for the first time are an animal tale and an alphabetical Aztec-Spanish word list in the dialect of Chilapa, Guerrero, recorded by Walter Lehmann in 1925. Both text and vocabulary use the traditional Spanish orthography for Aztec, but in the word list diacritics have been added for greater accuracy. Appended to these are brief paradigmatic materials, and some Aztec fragments collected by Lehmann some years earlier: sentences and words from "Ahuatepeque near Córdoba (Los Reyes)" and words from "San Pedro Tiquila, on the way to Omialco".

Contribuição à Lingüística Gê. ("Contribution to Gê Linguistics"). By Herbert Baldus. Miscellanea Paul Rivet Octogenario Dicata, vol. II, pp. 22–41. XXXI Congreso Internacional de Americanistas, Universidad Nacional Autónoma de México (Publicaciones del Instituto de Historia, Primera Serie, no. 50.) México, 1958.

The body of this paper is a list of terms for animals in three Gê languages: Xerénte, Krahó, and Apinagé. The animals are identified both by their Portuguese and zoölogical names. The author further examines the extent to which his data agree with those previously published, and the degree of similarity between the terms given and the equivalents in several other languages: Akué-Xavánte and Canela (of the Gê family), Kaingáng (classified as Gê by some authors), Karajá (unclassified), and Tapirapé (of the Tupí family). The results show varying measures of agreement between Xerénte, Krahó, Apinagé, Akué-Xavánte and Canela; but no clear cases of agreement between these and Kaingáng, Karajá, or Tapirapé.

Notas de Fonologia Mekens ("Notes on Mekens Phonology"). By Wanda Hanke, Morris Swadesh and Arion D. Rodrigues. Miscellanea Paul Rivet Octogenario Dicata, vol. II, pp. 187–217. XXXI Congreso Internacional de Americanistas, Universidad Nacional Autónoma de México (Publicacions del Instituto de Historia, Primera Serie, no. 50.) México, 1958.

A list of nouns in Mekens, a Brazilian language of the Tupí stock, was recorded by Hanke in 1949. This article (in Portuguese) presents a descriptive analysis of the material by Hanke and Swadesh, and a comparative study by Swadesh and Rodrigues. The consonant phonemes of the language are tentatively given as /kʷ p t k ȼ č, w r y, m n ñ/; the vowels are /u ɨ i a e/, plus their nasalized equivalents. A few morphological elements are identified. The comparative section consists of Rodrigues' classification of the Tupí stock, and of a chart showing phonemic correspondences between Mekens and related languages. The paper concludes with a Mekens morpheme list in the tentative phonemic transcription, with cognates from other languages and some Proto-Tupí reconstructions.

Las Formas de Contar de los Pueblos Primitivos y las Influencias Lingüísticas Surasiáticas y Oceánicas en la América Indígena. ("Ways of Counting among Primitive Peoples and the South Asian and Oceanic Influences on Aboriginal America"). By Dick Edgar Ibarra Grasso. Miscellanea Paul Rivet Octogenario Dicata, vol. II, pp. 269–95. XXVI Congreso Internacional de Americanistas, Universidad Nacional

Autónoma de México (Publicaciones del Instituto de Historia, Primera Serie, no 50.) México, 1958.

The author proposes that a comparative study of counting systems may point the way to provable relationships between certain American Indian languages and those of South Asia and Oceania. The counting systems of primitive peoples are first classified, and hypotheses are advanced regarding their evolution and diffusion. The 'duo-quinary-vigesimal' system is, in particular, said to have diffused from South Asia through Oceania to British Columbia, to central California, and to Central America, whence it spread through the Antilles and south as far as the Guaraní. The linguistic comparisons cited as reflecting this spread are "Indochinese" moi *man*, Trobriand mo *people*, Guaymí muoi *man*; and Polynesian lima *five* or *hand*, Pomo lima *five*, Cuna tale *hand* and atali *five*.

Vocabulário Botocudo de Charles Frederick Hartt ("Botocudo Vocabulary of Charles Frederick Hartt"). By M. de L. de Paula Martins. Miscellanea Paul Rivet Octogenario Dicata, vol. II, pp. 405–29. XXXI Congreso Internacional de Americanistas, Universidad Nacional Autónoma de México (Publicaciones del Instituto de Historia. Primera Serie, No. 50.) México, 1958.

The English-Botocudo vocabulary here published for the first time was collected in Brazil in the 1860's by Charles Frederick Hartt, a Canadian geologist. The original notation is inconsistent and sometimes illegible. A short list of Botocudo sentences is included. The editor's introduction, in Portuguese, explains that this publication is part of an effort to make available as wide a range of Botocudo data as possible.

Un Vocabulario Yabarana con Apuntes Fonémicos ("A Yabarana Vocabulary with Phonemic Notes"). By Alberto Méndez-Arocha. Antropológica no. 7 (May 1959), pp. 63–84. Caracas.

The Yabarana language is spoken by a small population in the Amazon Federal Territory of Venezuela; it has been classified as Cariban. The author presents a list of 630 utterances in phonetic transcription, recorded during a few days' field work. This data is followed by a discussion of phonemic problems, but the author's command of phonemic method is not sufficient to inspire confidence in his conclusions.

Textos Folklóricos Guarao ("Warao Folkloristic Texts"). By Henry Osborn. Antropológica no. 9 (January 1960), pp. 21–38. Caracas.

This group of texts, transcribed from tape recordings, supplements the authors "Textos Folklóricos en Guarao", Boletín Indigenista Venezolano 3-5.163-70 (1958). It consists of two ethnographic texts and five from the oral literature of the Warao, with Spanish translation.

Doña Dominga Galarza y las Postrimerías de un Pueblo y una Lengua ("Dominga Galarza and the Last Traces of a People and a Language"). By Clemente Hernando Balmori. Revista de la Universidad de La Plata, vol. 9 (1959). 15 pp. La Plata, Argentina, 1960.

The Vilela language was spoken in the Chaco of Paraguay and northern Argentina. One of the last speakers, an elderly woman named Dominga Galarza (a photograph of whom introduces this publication), is serving as informant for the author, who hopes to fill out the Vilela data published by Samuel Lafone Quevedo in 1895. The present paper discusses and analyzes tribal names and other fragmentary matter, from Vilela and related dialects, recorded by early writers.

Fonemas de la Lengua Ignaciana ("Phonemes of the Ignaciano Language"). By Willis and Rebeca Ott. Notas Lingüísticas de Bolivia, no. 1 (1959). La Paz.

Ignaciano is a dialect of the Moxos, Moxo, or Mojo language, belonging to the Arawakan stock; it is named after the Mission of St. Ignatius which has been the

center of tribal life since 1689. The phonemes include voiceless stops /p t k/, voiced fricative /b/, voiceless sibilants /s š/, affricates /ȼ č/, nasals /m n ñ/, vibrant /r/, glottal /ʔ h/, and vowels /i u ɛ a/. Of these, /š/ is quite rare. Loans from Spanish also contain /b d f l/ and a velar allophone of /n/. There is a phoneme of accent. Most syllables have the forms V, CV, CV_1V_2; a medial cluster /st/ is of rare occurrence. The phonemic description is followed by a word-list of 66 items, and the booklet is ended with a glossary of technical terms prepared by Mary Key.

Colección de Textos Tegrías ("Collection of Tegría Texts"). By Padre H. J. Rochereau. Revista Colombiana de Antropología, vol. 8 (1959), pp. 9–126. Bogotá.

	FAST	WISE
[e· a· o·]	/e· a· o·/ (single)	/e· a· o·/ (complex
[eʔ aʔ oʔ]	/eʔ aʔ oʔ/ phonemes)	/eʔ aʔ oʔ/ syllable
[eh ah oh]	/ex ax ox/ (phoneme sequences)	/eh ah oh/ nuclei)
[β]	/b/	/γ/ before /e/ elsewhere
[γ]	/g/	
[pʲ mʲ]	/pʲ mʲ/	/pʲ mʲ/ before /e/ elsewhere
[pʷ mʷ]	/pw mw/	
[k] + vowel retraction	(not noted)	/kʲ/ before /e/ elsewhere
[kʲ]	/ky/	
[x γ] + vowel retraction	(not noted)	/xʲ γʲ/ before /e/ elsewhere
[øʲ βʲ]		

Tegría is a dialect of Tunebo, a Chibchan language of Colombia; the present work supplements a grammar and dictionary published in 1927. It consists of 1) 75 short texts used for instruction in Christianity; 2) a collection of sentences to be used in everyday conversation; 3) addenda to the earlier Tunebo-Spanish dictionary; and 4) texts of several chants used in the aboriginal religion, in "a fossil language that the Indians no longer understand."

2. Anglo American publications abstracted by William Bright, Viola Waterhouse, and Dell H. Hymes:

Diverse Points of Articulation of Allophones in Amuesha (Arawak). By Mary Ruth Wise. Miscellanea Phonetica 3 (1958) pp. 15–21. Hertford, England.

The Amuesha language of eastern Peru is classified, with some doubt, as Arawakan. The phonemic analysis here presented differs from that given by Peter W. Fast, "Amuesha (Arawak) Phonemes", IJAL 19. 191-94 (1953). If we neglect differences in choice of symbol, and replace certain symbolizations by ones more easily understood, the two systems are seen to agree on the following phonemes: vowels /e a o/ and consonants /p t k, c č ǩ, s š ş, m n, w y r/, plus palatalized /čʲ nʲ lʲ/. Both systems assign the phone [x] to a phoneme /x/. Differences between the two, however, include the following:

In addition, Fast's initial consonant clusters (other than /pw mw ky/) are regarded by Wise as consonants separated by an allophonically voiceless vowel. Wise shows that /pʲ mʲ kʲ γʲ xʲ čʲ nʲ lʲ/ should be considered unit phonemes because they contrast with sequences of consonant plus semivowel, and because they have the distribution of single consonants. Her paper concludes with morphophonemic observations on these consonants and with a group of illustrative sentences. [W.B.]

Non-Phonemic Transition Vocoids in Piro (Arawak). By Esther Matteson and Kenneth L. Pike. Miscellanea Phonetica 3 (1958), pp. 22–30. Hertford, England.

The Piro language, spoken in the Urubamba region of Peru, is found to have the following consonantal phonemes (some substitution of symbols is made here): voiceless stops /p t k/, affricates /c č c/, voiceless fricatives /s š ś/, a nasalized spirant /h/ (including allophones [ŋ] and nasalized [γ]), voiced flaps /l r/, and voiced continuants /m n j w/. Only the continuants occur in geminate clusters. Vocoids include the vowel phonemes /i e o a ï/, corresponding long vowels analyzed as geminate clusters, and a set of extra-short "transition voicoids", upon which the author focuses attention. These voiced and voiceless vocoids, written [ə ə̯ i i̯ ɪ ɪ̯ o o̯ a ï u], varying under certain conditions with syllabicization of a preceding consonant, are in contrast with the vowels of normal length. They can be analyzed, however, as automatic transitional features between the members of phonemic consonant clusters. Timbre and voicing in each case depend on the particular consonants involved. [W.B.]

Translation and Word Frequency. By Eugene A. Nida. The Bible Translator, vol. 10 (July 1959), pp. 107–110.

Most Greek sentences begin with connectives; English sentences do not. To translate every Greek connective in English is to mistranslate and fail to convey the straightforward style of the Greek. An adequate translation consists of the closest natural equivalents both in meaning and in style. [V.W.]

How Intelligible is a Literal Translation? By David C. Fox. The Bible Translator, vol. 10 (October 1959), pp. 174–176.

Fox gives a literal and then a colloquial English translation of a brief Quiche text to make his point that an intelligible translation must be 'the way the people speak.' [V.W.]

Christianization of Vocabulary in the Translation of the Tzeltal New Testament. By Marianna C. Slocum. The Bible Translator, vol. 9 (April, 1958), pp. 49–56.

Three fundamental processes are used in building a New Testament vocabulary in a pagan culture: (1) innovation, the borrowing of new terms, (2) reinterpretation, extension or reduction of meaning of existing terms, (3) adaptation of existing terms in new combinations. Innovation was used in Tzeltal for cultural items whose native terms had bad or very restricted connotations. Most terms were either reinterpreted or adapted. These processes were greatly facilitated by the adaptability of the language to express new concepts and the flexibility of the native speakers toward adopting the new expressions as they became part of their language and experience. [V.W.]

String Constituent Analysis. By Robert E. Longacre. Language, vol. 36 (January-March 1960), pp. 63–88.

Some linguistic structures are layered; others are like beads on a string. Analysis of both types is pertinent to both morphology and syntax. Layers are analyzed traditionally into IC's; strings are analyzed into Pike-type tagmemes: substitution points together with the classes found at each. Hypertagmemes are structurally contrastive strings, composed of constituent tagmemes.

Analysis of a complicated English sentence shows string analysis useful for (a) presenting a systematic hierarchy of levels, (b) comparing similar structures on the same level.

Strings are procedurally divided into tagmas. Tagmas on different levels are different tagmemes. Phonological levels may not coincide with grammatical levels. Hypertagmeme analysis may affect analysis of constituent tagmemes. Some tagmas are clearly in contrastive distribution, others not. Tagmas in noncontrastive distribution may be united into one tagmeme.

Hypertagmemes on the same level are separated if (a) there are two structural

differences, (b) these relate to both obligatory and optional tagmemes, or to more than one obligatory tagmeme. Difference of transform potential is structural.

Included strings differing in (a) number and type of constituent tagmemes, (b) internal organization, (c) kind and amount of information can set up further structural levels. Included strings are detectable when (a) a supposed initial tagmeme is found medial, (b) a tagmeme normally occurring once is found more than once, (c) tagmemes diagnostic of different strings occur in the same string. Included strings may be of the same, lower, or higher level. Tagmemes may be layered or grouped within the same string.

Taxonomic labels in grammar, rigorously checked against formal data, are useful and more intelligible than equally possible abstract symbolization.

Illustrative examples of theory and procedure are taken from English, Hebrew, Trique, Zoque, Ixil, K'ekchi, Jacaltec, Candoshi, and Cashibo. [V.W.]

A Note on Visual Non-Literary Methods of Communication Among the Muruts of North Borneo. By Ivan Polunin. Man, vol. 59, Articles 133–176 (June, 1959), #143, pp. 97–99.

The Paluan Muruts in the interior of North Borneo have several visual sign systems that do not involve writing. Most notable are the announcement sticks, which are set up in public places, and to which various objects are fixed. Messages are quickly constructed out of readily available materials, and are fairly long-lasting, but the range of messages is limited. The objects convey information partly iconically, partly conventionally; meanings may be qualified by modification of the objects. Announcements often refer to ceremonial life and hunting, two major subjects of concern and conversation; the signs are understood by all.

Other common signs warn of taboos in force or dangerous traps. Knotted rattan cords are used to measure elapsed time. The Murut are adept at communicating with the many dumb or feebleminded people by dumb-show, but the method does not seem formal or consciously learned. [D.H.]

Linguistics and Anthropology. By R. H. Robins. Man, vol. 59, Articles 282–307 (October, 1959), #283, pp. 175–178.

There has recently been opportunity to consider relations, both theoretical and practical, between anthropology and linguistics. Autonomy of linguistics does not imply that linguists should disinterest themselves in the world of learning outside. There is obligation to look both inward to refinement of theory and efficiency of technique, and outward to connections with other studies. The principal founders of American linguistics, Sapir and Bloomfield, typify these two attitudes, Sapir as a centrifugal force, Bloomfield almost wholly centripetal. The latter's influence tended to dominate until recently, particularly in the U. S. The occasion to examine relations between linguistics and anthropology and the possible field of their collaboration is much to be welcomed. [The paper was read at a meeting of the Association of Social Anthropologists, at the School of Oriental and African Studies, University of London, in April, 1959].

(1) What are the principal points of contact between linguistic theory and anthropological theory? (2) To what extent can linguistic knowledge specifically help anthropological work? (3) To what extent can anthropological knowledge specifically help linguistic work?

Regarding (1), language is part of culture, and it is logical to treat the relation of linguistics to anthropology as one of part to whole. Further, both disciplines abstract patterns and regularities from the mass of observed behavior in certain fields, and systematize and explain them by appropriate categories, themes, and structures; both recognized at about the same time the need to keep synchronic and diachronic

analysis apart. Congruence of general method does not imply common substance or identical descriptive terminology *à la* Pike. Fundamental elements comparable to those of linguistics can scarcely be sought in fields quite differently ordered and resting on quite different physiological bases. But the embeddedness of language in the rest of culture does raise questions that are among the joint responsibilities of linguists and anthropologists, including the role of native verbalizations in transmission of culture and in formulating anthropological descriptions; Whorf's speculations; and linguistic theories of meaning. Whorf's views can scarcely yet be finally adjudged, and the whole field is surely one to be jointly investigated. A referential [or atomistic] theory of meaning which seeks separately isolable situational elements that correspond to each separable linguistic element is inferior to a contextual, or field, theory, which considers sentences, and these as having a function or set of relations within a context.

Regarding (2), the utility of linguistic knowledge in anthropological work depends much on the geographical area. In most areas linguistic skills will lighten the field worker's load and increase his efficiency. Also, vocabulary is well known as an index of culture, and analysis of loan words is significant for cultural contacts; even elementary control of phonemic analysis will enable the field worker to recognize divergent patterns in 'unassimilated' loans, and thereby may open up new lines of cultural and historical investigation.

Regarding (3), the utility of anthropological knowledge in linguistic work also depends much on the area of work. It is most profitable where the linguist is to be the only scholar, or one of a few, responsible for knowledge of a language. Anthropological training and sophistication will help the field linguist in seeking answers to many of his questions.

In general, it may be desirable to encourage greater collaboration, particularly in teaching, between linguists and anthropologists.

[This address seems a significant document for the future relations of linguistics and anthropology in England. Its details and references reflect the sophisticated knowledge of American anthropology and linguistics shared by many British linguists. Comparison to David L. Olmsted's Ethnolinguistics So Far (Studies in Linguistics, Occasional Papers, 2 (1950)) on the American scene is of interest. [D.H.]]

Skeletal Evidence of Speech? By E. Lloyd Dubrul and Charles A. Reed. American Journal of Physical Anthropology, vol. 18, no. 2 (1960), pp. 153–156.

Some inadequate and still current notions about skeletal evidence of speech are discussed, particularly regarding genial tubercles and 'speech centers'. It is, however, sensible to look for structural evidence of speech, both in peripheral areas (throat, mouth, jaw) and in central regions (brain); "though we may not yet know skeletal structures that we can surely associate with speech, it seems quite hopeful that they can be derived" (p. 156). But recent assertions on the basis of skeletal evidence as to the presence or absence of speech in various primates and finds of early man are not warranted. [D.H.]

Blood Group Antigens Among the Paraujano. By M. Layrisse, Z. Layrisse and J. Wilbert. The American Journal of Physical Anthropology, vol. 18, no. 2 (June 1960), pp. 131–139.

In the course of their report, the authors discuss Paraujano connections with other Venezuelan groups. Although culturally related to tribes of Marginal type (Warrau, Piaroa, Guahibo, *et al.*), the Paraujano are distinct genetically (on the evidence of Diego antigen frequencies) and linguistically (Arawkan, whereas other Marginal tribes apparently form independent stocks). Draw-

ing on Swadesh's glottochronologic results,[1] the authors assume the ancestors of the Paraujano, and also of the Goajiro, were part of an expansion of Arawak-speaking hunters and fishers across northern South America that began some 6500 years ago.

By Swadesh's calculation, Paraujano and Goajiro separated some 20 minimum centuries ago. A test of the presumptive prior ethnic unity showed both tribes genetically identical in most blood antigens tested, including the Diego group.[2] Since separation, the Paraujano and Goajiro blood stocks have not intermixed at any considerable rate, due mainly to different social structures and strong *esprit de corps* in both tribes, together with deep rooted tribal prejudice. [D. H.]

3. European publications abstracted by William Bright:

Morphological Phoneme Sequences in Eastern Otomí. By Joyce Jenkins. Phonetica, vol. 2 (1958), pp. 1–11. Basel, Switzerland.

The Otomí dialect of San Gregorio, Hidalgo, is described as having tones /ˋ ´ ˇ ˆ/, oral vowels /i e ɛ a o ɔ u ï ø/, nasalized vowels /ĩ ɛ̃ ã ũ/, and consonants /p t k ʔ, b d, c s z š, m n, r h w y/. Phonemic distributions are described with reference to word, syllable, and morpheme boundaries. It is noted that consonantal complexes such as /ph pʔ ʔb ʔn py kw/ could also be treated as single phonemes, but two arguments against this are presented: Firstly, they are paralleled by sequences like /sp nk rk nw nʔ hs/, which are analyzed as clusters: secondly, such consonantal complexes often contain morpheme boundaries within them, so that regarding them as single phonemes would require additional morphophonemic statements.

[1] M. Swadesh, La linguistica de las regiones entre las civilizaciones mesoamericanas y andinas. 33 Congreso Internacional de Americanistas, San José de Costa Rica, 1958. In press.

[2] Layrisse, M., Z. Layrisse, and J. Wilbert, 1960, Blood Group antigens in Goajiro Indians. In press.

Instrumental Collaboration on a Tepehuan (Uto-Aztecan) Pitch Problem. By Kenneth L. Pike, Ralph P. Barrett, and Burt Bascom. Phonetica 3 (1959), pp. 1–22. Basel, Switzerland.

This paper reports the use of the sound spectrograph in a Tepehuan problem which could not be readily settled on the basis of auditory impressions. The possibilities considered are that Tepehuan may have phonemic stress and conditioned pitch, phonemic lexical pitch and conditioned stress, or perhaps phonemes both of lexical pitch and of stress. The first possibility is ruled out by spectrograms which show certain minimal pairs to be differentiated only by pitch.

Tonomechanics of Northern Tepehuan. By Burt Bascom. Phonetica 4 (1959), pp. 71–88. Basel, Switzerland.

The recognition of two phonemic tones in Tepehua leads to the description of extensive tonomechanical alternations, otherwise referred to as morphophonemic perturbations of tone. Certain suffixes are shown to condition changes of tone in stems, which are divided into morphophonemic classes according to the particular tonal changes which they display. In addition, certain tonal alternations occur in syntactic combinations. The phenomena described are illustrated by a short text with literal translation.

Die Phonetischen Grundlagen der Vokalphoneme des Cahuilla ("The Phonetic Bases of the Cahuilla Vowel Phonemes"). By Hansjakob Seiler. Zeitschrift für Phonetik und Allgemeine Sprachwissenschaft 10 (1957), pp. 204–23. Berlin.

The vowels of Cahuilla, a Uto-Aztecan language of Southern California, are here used as material for a demonstration of phonemic method. Some 32 vowel phones are classed into the phonemes /a e i u o/; however /o/ occurs only as geminate /oo/ in loanwords like tóoruh *bull*. On the phonetic level, primary and secondary accent are distinguished; the primary usually falls on

the first syllable of each root, but is phonemic since its position is not phonologically conditioned. Secondary accent, however, is predictable, falling on alternate morae before and after the primary accent, each vowel or semivowel constituting one mora. Allophonic vowel height is then predictable from the occurrence of primary and secondary accent. Voiceless vowel allophones, on the other hand, are predictable from their consonantal and vocalic surroundings. Long vowels are phonemicized in two ways: the high ones are /iy uw/, since they are followed by audible friction in some environments, but the others are /aa ee oo/. An appended chart of consonants shows the phonemes /p t č k kʷ q ʔ, v s š xʷ x h, l ɬ, m n ñ ŋ̍, w y/; loans from Spanish contain, in addition, /f đ γ r/.

Zur Aufstellung der Wortklassen des Cahuilla ("On the Establishment of the Cahuilla Word Classes"). By Hansjakob Seiler. Münchener Studien zur Sprachwissenschaft 12 (1958), pp. 61–79. Munich.

Cahuilla stems are subject to prefixing, suffixing, reduplication, and composition. It is found that prefixal patterns provide the best basis for a classification of words, as follows: Class A (pronouns and interjections), words which can contain no prefix. Class B (verbs), words which may contain pronominal prefixes preceded by other types of prefix. Class C (nouns), words which may contain pronominal prefixes, but no others preceding them. Class D (particles), words which may contain prefixes, but not pronominal ones. These groups agree with the classification of words according to their syntactic function.

Notes on Huambisa Phonemics. By David Beasley and Kenneth L. Pike. Lingua Posnaniensis, vol. 6 (1957). 8 pp. Poznań, Poland.

The Huambisa language, a member of the Jívaro family, is spoken in northeastern Peru. Phonemic analysis yields the following consonants: stops and affricates /p t ȼ č k/, with voiced and voiceless allophones; a glottal stop occurring only in exclamations and as a question marker; voiceless fricates /s š/ and a velar one written /h/; nasals /m n ŋ̍/, the last having both palatal and velar allophones; flap / ř/ and semivowels /y w/. The Huambisa vowels include oral /i u a ï/ and voiced nasal /į ų ą į̈/; voiceless oral [I U A Ï] also occur, but are still of doubtful status. The existence of heterogeneous vowel clusters leads to the analysis of [a·] as /aa/, etc. Phonemic distribution is statable in terms of syllables having forms V, CV, CVC, and VC, plus a few cases of syllables with final /nȼ nč/. Loan words show replacement of Spanish /b/ by Huambisa /m, of initial /l/ by /y/, and of medial or final /l/ by /ř/.

Bemerkungen zu den Konsonantenverbindungen im Ur-Algonkin ("Remarks on the consonant clusters in Proto-Algonquian"). By Heinz-Jürgen Pinnow. Zeitschrift für Phonetik 11 (1958), pp. 350–55. Berlin.

Although Bloomfield reconstructed */č q m n θ š ç x h/ as first members of Proto-Algonquian clusters, it has been recognized that the phonemic status of these elements is not entirely clear, especially since */q ç x h/ were not reconstructed in other positions. Pinnow notes that several of these elements are in complementary distribution, and proposes that they be phonemically re-interpreted as follows: 1) Bloomfield's *m occurs only before *p, and *n only before other consonants; *mp is therefore reinterpreted as *np. 2) *x occurs only before */p k/, *q only before other consonants, and *k not at all as first member of clusters; these are all grouped, therefore, under the *k phoneme. 3) *h is identified with *s. 4) *ç, occurring only before *k in Bloomfield's system, is identified with *t. The consonants occurring as first members of clusters are thus reduced to */t č k n θ s š/.

4. Articles on psycholinguistics abstracted by Susan Ervin:

[The *semantic differential*, an instrument for the measurement of connotative meaning, is the basic tool of The Measurement of Meaning, by Charles E. Osgood, George J. Suci, and Percy H. Tannenbaum (Urbana: University of Illinois Press, 1957). The book elicited important reviews from John B. Carroll (Language 35:1.58-77 (1959)) and Uriel Weinreich ("Travels Through Semantic Space, "Word 14:2–3.346–366 (1958), and an exchange between Osgood ("Semantic Space Revisited", Word 15:1.192–200 (1959) and Weinreich ("A Rejoinder," Word 15:1.200–201 (1959)). The following abstracts are of articles which have described cross-cultural use of the semantic differential. In general, informants place words, pictures, or objects on each of a series of scales being asked to make usually a seven-step choice of position between two descriptive opposites (such as GOOD : BAD, or LARGE : SMALL) on each. The same set of scales is used for all informants and for all 'concepts' or objects of judgment. The judgments thus are often metaphorical, since it might be necessary to decide how SWEET : SOUR 'colonialism' is. Use of the same instrument permits quantitative comparison between informants and between concepts. S.E.]

A pilot study of cross-cultural meaning. By Hideya Kumata and Wilbur Schramm. Public Opinion Quarterly col. 20 (1956), pp. 229–238.

Kumata and Schramm conducted the first of a series of studies comparing both the dimensions of connotative meaning and the ratings of translation-equivalent concepts in several languages. The comparison of ratings of concepts requires first that the correspondence of the measuring instruments or scales be demonstrated.

In this study, Korean, Japanese, and American students, all in this country, were asked to rate political concepts and persons twice. The bilinguals made one of their ratings in their native tongue. Comparison of the dimensions of meaning was by factor analysis, a statistical technique which extracts what various scales have in common, revealing the basic dimensions or factors shared by the scales. Such analyses have been conducted many times on a variety of American samples, and they usually reveal three primary dimensions: *evaluation* (GOOD, CLEAN, PRETTY) *potency* (STRONG, HEAVY, BIG) and *activity* (FAST, ACTIVE).

Kumata and Schramm found only two clear factors, the first *evaluation* and the second "dynamism," a merger of *potency* and *activity* found also in other studies employing political concepts. The most important of their findings was that the factors were highly similar in the three groups of informants, as well as in the two languages for the bilinguals. Examination of specific scales does show a slight difference—e.g. in Korean HOT, DELICATE, and ROUNDED showed a higher relation to evaluation than appeared in the other two groups. Presumably such deviant scales should be excluded from cross-cultural comparisons of concepts. Their implications for the cross-cultural equivalence of factors is a matter for debate. The paper also presents some comparisons of concepts, showing, for instance, that Japanese rate MAO and COMMUNISM more favorably than the Koreans, and that the greatest difference between the groups is in their self-ratings as groups.

A comparative factorial analysis of semantic structures in monolingual Greek and American college students. By Harry C. Triandis and Charles E. Osgood. Journal of Abnormal and Social Psychology, vol. 57 (1958), pp. 187–196.

Including a much wider variety of concepts than Kumata and Schramm, and monolingual informants, Triandis and Osgood obtained a lower degree of similarity in the factor structures of the two groups tested. Again, evaluation was clearly the

primary factor in the two groups, and the usual potency and activity factors appeared in the Americans. But the Greeks produced a second factor agreeing less with the American second factor, and the authors' criterion for high similarity was not reached by the third factors. The second Greek factor included both the usual potency scales and SLOW-FAST and ACTIVE-PASSIVE, suggesting a merger of the American second and third factors. Over a third of the scales differed markedly in their factorial composition in the two groups. Such scales were excluded from the cross-cultural comparison of concepts.

The most extensive comparison of ratings yet presented in cross-cultural material is discussed by the authors. There were differences in general rating tendencies—e.g. social institutions and roles were judged as warmer and more sociable by Greeks than by Americans. Differences in general tendencies and in specific ratings are related to culture differences as described by D. D. Lee elsewhere, and by Triandis himself. For example, sickness was seen by the Greeks as more SOCIABLE, PUBLIC, COLORFUL, and USUAL than by Americans, reflecting differing care patterns, and also as more powerful and dangerous.

A comparison of semantic structures in American Southwest culture groups. By George Suci. Journal of Abnormal and Social Psychology, vol. 61 (1960), pp. 25–30.

The SSRC Southwest Project on Comparative Psycholinguistics was the first to employ the semantic differential cross-culturally with rural and relatively uneducated informants. The groups included were Navaho, Zuni, Hopi, Mexican-American and Anglo, the last consisting of three groups of college students who rated the same concepts as the Southwest groups. The Navaho sample differed from the others in that about a fourth were monolingual and another fourth were Navaho-dominant, the instructions were given in Navaho, and most of the tests were administered by a Navaho.

If the indices of similarity are examined, it appears that the similarity between the three Anglo groups was highest though the concepts they rated differed. Next in similarity were the Anglos and Mexican-Americans. For the first two factors, evidently evaluation and dynamism again, the similarity scores for four of the groups surpassed the authors' criterion. But the Navahos were quite different from the others, except on the first factor which was somewhat similar to the Anglos'. Because of the similarity in the other four groups, the author concludes that "a high degree of similarity may be assumed to exist in the semantic frames of reference used by subjects of different cultural background."

The cross-cultural generality of visual-verbal synesthetic tendencies. By Charles E. Osgood. Behavioral Science, vol. 5 (1960), pp. 146–149.

This study reports two different projects. One is a comparison between Navaho and English semantic differential ratings of colors, showing that for both lightness is related to evaluation and saturation to potency, but that hue was judged rather differently. The other is an attempt to validate the semantic differential verbal scales by asking that they be compared to pictures, where no translation problem is presumed to exist. The "concepts" for judgment included color words and scale terms used on the semantic differential. The pictures were of simple physical oppositions. Thus an informant might be asked whether the word HAPPY went better with a big circle or a little one, and then, with a black circle or a white one.

The first question was the similarity of the pictorial ratings of translation-equivalents. If one examines only those cases where there is significant intra-cultural agreement on a rating, it appears that there is a very high degree also of cross-cultural agreement. Thus

in all four groups of informants—Navahos, Mexican-Americans, Japanese visiting students, and American students—over 80% of each group said that BAD was closer to a thick than to a thin line, to a colorless than to a colored circle, to a black than to a white circle, to a crooked than to a straight line. The lowest level of over-all agreement for such items, 86%, was between the Navahos and Anglos.

A second issue was whether the words presented were functionally antonyms in all the groups, that is, whether they were given opposite pictorial ratings. For 11 out of 12 of the pairs of English opposites, functional opposition also appeared in all the other groups. The exception was FAST-SLOW, which in Navaho are adverbial forms which would appear with a description of movement and may therefore both imply movement. In other cases the opposition was present but weaker than in English. Thus in Navaho MAN and WOMAN, and EXCITEMENT and CALM were not in strong opposition; in Japanese ENERGETIC and LAZY and in Spanish STRONG and WEAK were in least opposition.

The ratings of the concepts were analyzed to see if the conceptual structure corresponded to that found with the usual semantic differential. The first three factors for the Anglos were, as usual, evaluation, potency, and activity, but the factors for the other groups were less clear. The indices of similarity showed a correspondence between groups only for the first two factors, and the Navahos did not meet the criterion of similarity for any of the factors.

The difference of the Navahos from other samples appears only in the analysis of words, or one might say in the structure of verbal meanings. In this study it was possible also to find the dimensions of visual meaning for the set of 13 visual contrasts shown. In this analysis the Navahos were no more different than any of the other groups, and the similarity of choice of pictures brings the Mexican-Americans and Navahos closer than either group was with the Anglos and Japanese

The influence of language-acquisition contexts on bilingualism. By W. E. Lambert, J. Hevelka, and C. Crosby. Journal of Abnormal and Social Psychology, vol. 56 (1958), pp. 239–244.

This paper returns to a problem presented by Kumata and Schramm in terms of the dimensions of meaning in bilinguals, but it concerns only the content of judgments of translation-equivalent terms. Three groups of Canadian bilinguals were compared in terms of the degree of similarity between the semantic differential ratings of translation-equivalents by the same person in two languages. One group had used both languages interchangeably in the same settings and with the same interlocutors. A second group had learned both languages in Quebec but spoke them with different interlocutors; the third group had learned in France and America, where the cultural setting for the two languages would be most distinct. The first two groups were similar in the degree of shift; the last group showed the most extreme difference in meaning. No evidence is given as to whether the differences between the other two groups were greater than that which would appear on repetition of the test in one language. The test might be regarded as a means of finding the degree of cultural distinctness of various domains of a bilingual's life. Several other measures besides the semantic differential were used to compare the three samples.

Studies in the phenomenology of emotions. By Jack Block. Journal of Abnormal and Social Psychology, vol. 54 (1957), pp. 358–363.

Norwegians and Americans were asked to give semantic differential ratings to translation-equivalent terms. Two comparisons were made cross-culturally: the ratings of each emotion were correlated in the two groups, showing major differences in judgments of

NOSTALGIA and GRIEF but high similarity in many others. Also, the similarity between emotions within cultures was compared, to see if those emotions which were viewed as highly similar by Americans also seemed highly similar to Norwegians. Some striking differences appeared. The Americans saw ANGER and SYMPATHY as more distant than did the Norwegians, and they saw GRIEF and GUILT as very similar whereas the Norwegians thought them unrelated. Sixteen judges familiar with the cultures predicted the differences with considerable success.

PROBABILITY AND STRUCTURAL CLASSIFICATION IN LANGUAGE DESCRIPTION. Henning Spang-Hanssen. Copenhagen: Rosenkilder and Bagger, 1959. 232 pps. plus 10 Tables.

SOL SAPORTA

The author of this book points out at the very beginning that 'One of the aims of a linguistic description of texts is to set up predictions on the occurrence of certain phenomena in texts not yet examined, in particular in all texts in a certain language.' (11) Consequently, the description of closed texts is of minor interest to linguistics since it does not involve any linguistic hypothesis, and conversely, the description of an open, i.e., infinitely extendible, text is by definition a hypothesis, or as Spang-Hanssen prefers to call it, a 'prognostic description.' Now, it is clear that in order to set up a hypothesis, 'it is of no consequence whether further texts are empirically available' (15); however, we consider that the observed material is 'a sample drawn at random from a certain assumed material.'[1] (15) Given such a sample, some hypotheses are better founded than others, that is, there is a higher degree of certainty attached to some predictions. Spang-Hanssen is concerned essentially with defining what constitutes a highly motivated hypothesis; in other words, he requires that linguistics provide what Chomsky[2] has called a discovery procedure, namely a method for arriving from the text to the description. The first part of the book discusses the general problem from the points of view of glossematics and the mathematical-statistical theory of randomness; the notions thus developed are applied to an analysis of the graphemes of Danish.

In any given text, 'certain units are found occurring in certain combinations ... whereas usually certain other combinations of the same units have not been encountered' (13). Presumably, the different conditions of occurrence determine the hypotheses set up about the possibility or impossibility of the occurrence of combinations in open texts. Thus, according to the author, the presence of English words *mad*, *nod*, *nag* motivates the hypothesis that *nad* is a possible English word, or phrased differently that the non-occurrence of *nad* is accidental, the basic question in linguistics being to distinguish which non-occurrences are accidental and which are systematic. Positing the grammaticalness of *nad* seems reasonable, but it is not clear why the presence of *mad*, *nod*, *nag* is necessary and sufficient for such a prognosis.

The author suggests that all distributions which deviate from chance are linguistically relevant, but such a position seems to confuse the deterministic, yes-or-no aspects of language with the probabilistic, more-or-less aspects. He cites as an example the fact that 'In Danish orthography combinations of *å* with final clusters occur in few words only, compared with the combinations of other vowels with final clusters, or compared with combinations of *å* with simple finals.' (18) However, one suspects that this is a different

[1] There are two rather minor points: First, Spang-Hanssen does not point out that the openness of texts applies to sentences but not, say, to words or syllables. Since we are presumably willing to specify a maximum length on syllables as well as a finite number of phonemes, there is a finite number of possible syllables. Second, the requirement that the sample be random implies that the results of the usual eliciting procedures such as filling-out of paradigms, which are anything but random, do not legitimately fall within the data for formulating hypotheses, but are rather in the nature of predictions.

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[2] Noam Chomsky, Syntactic Structures ('S-Gravenhage, 1957).

kind of deviation than the one resulting, say, from the non-occurrence in English of initial /ŋ/. Although it is obvious that not all non-occurrences are systematic, it is not enough to maintain that systematic empty spaces are merely special cases of deviations from chance. In short, both non-occurrence and deviation from chance are required to posit a structural gap; neither by itself is sufficient. For example, an examination of about 20,000 syllables in Spanish[3] yields no example of a diphthong followed by a consonant cluster, but the very low frequency of final clusters in general makes the chance probability of such a sequence so low that its absence in a corpus of 20,000 syllables is not statistically significant. Positing the ungrammaticalness of -VVCC, then, is not a very well-motivated hypothesis. Conversely, something other than the relatively low frequency of å with final clusters is needed to warrant inclusion of a statement of such a restriction in a generative grammar, since, otherwise, the grammar would have to include innumerable, trivial statements about low frequency sequences made up of high frequency units, like *red sugar*, etc.

The author's discussion is aimed at clarifying the bases for hypotheses about combinations of units independently of how the units are arrived at, but he points out that essentially the same statistical procedures are relevant to deciding such questions as the probability that two items found to be in complementary distribution in some text will or will not contrast in some subsequent text. The argument applies equally well to combinations of features: given an inventory of stops /p t k b d/, under what conditions is the hypothesis that there is no /g/ a better one than the reverse?

The author illustrates his method with an analysis into consonants and vowels of the Danish graphemes based on their occurrence in 'graphic words' of one or two letters. 'The one-letter word *i* has been interpreted as representing the binary combination *ii*. In general, it proves useful to interpret the occurrence of a single element as representing an "auto-combination" of the element, since by this means one and the same diagram can deal with single as well as binary combinations' (35–36). The occurring expressions are presented in Diagram 1.

It is then suggested that all combinations be entered regardless of the order of their elements. This adds, for example, combinations ga and ge because of the occurring words ag and eg. The result is Diagram 2, with the added items in italics. The procedure aims at obtaining the largest possible empty cross-field, which results in the classification shown in Diagram 3. Such a dia-

	a	b	d	e	f	g	h	i
a	aa	ab	ad		af	ag	ah	
b	ba							bi
d	da			de				di
e		eb	ed			eg		
f				fe				
g								gi
h	ha							hi
i			id				ih	i

DIAGRAM 1

	a	b	d	e	f	g	h	i
a	aa	ab	ad		af	ag	ah	
b	ba			*be*				bi
d	da			de				di
e		eb	ed		*ef*	eg		
f	*fa*			fe				
g	*ga*			*ge*				gi
h	ha							hi
i		*ib*	id			*ig*	ih	i

DIAGRAM 2

	b	d	f	g	h	a	e	i
f						*fa*	fe	
h						ha		hi
g						*ga*	*ge*	gi
b						ba	*be*	bi
d						da	de	di
a	ab	ad	af	ag	ah	aa		
e	eb	ed	*ef*	eg				
i	*ib*	id		*ig*	ih			i

DIAGRAM 3

[3] Sol Saporta and Rita Cohen, The Distribution and Relative Frequency of Spanish Diphthongs, Romance Philology 11.371–77 (1958).

	e	h	b	d	f	g	a	i
h							ha	hi
e			eb	ed	*ef*	eg		
b	*be*						ba	bi
d	de						da	di
f	fe						*fa*	
g	*ge*						*ga*	gi
a		ah	ab	ad	af	ag	aa	
i		ih	*ib*	id		*ig*		i

DIAGRAM 4

gram is in effect a prognostic description, since it is understood to mean that the non-occurring fi is a possible Danish word, and conversely that fb is not. And furthermore, the insistence on the largest possible empty field results in the classification in Diagram 3 being more motivated than any other, say, the one in Diagram 4. Spang-Hanssen's method, then, is essentially an attempt at making explicit what is usually understood by patterning.

The author discusses the converse of the systematic non-occurrence, what might be called the accidental occurrence. In his terms, the occurring interjection hm is 'isolated' because to include it involves classifying either h or m as a vowel, which in turn 'will give rise to a considerable number of unoccupied places' (140) in the field representing the occurring sequences of consonants and vowels. The conclusion is that just as some non-occurring sequences are grammatical, so some occurring sequences are ungrammatical at least at a certain level of grammaticalness.

The second chapter includes a brief summary of structural functions from the glossematic point of view. For example, given two functives a and b which co-occur in a text the following exhaust the possible relations:

	ab	ab̄	āb
solidarity	+	−	−
selection	+	+	−
combination	+	+	+

The author is stingy with examples, but presumably, the relation in Spanish, between a verbal stem and a verbal suffix is one of solidarity, since neither may occur without the other. In English the function is one of selection with the stem being what Spang-Hanssen calls the constant and the suffix being the variable. Since English has sequences *pace*, *lace* and *place*, the relation of *p* and *l* is one of combination. The author recognizes that the glossematic definitions do not offer criteria for a solution to the basic problem of distinguishing systematic from accidental non-occurrence. The problem becomes restated: Given two functives which always co-occur in an examined text are there objective criteria for deciding whether the function is one of solidarity, or is the non-occurrence of one without the other an accidental non-occurrence?

Other subjects which come up for discussion include the syllable as the unit for stating phoneme and grapheme distribution, and the criteria for deciding between the unit vs. cluster analysis, in this case of the Danish *sp st* and *sk*. However, in general, the most interesting section of the book is the first chapter, setting forth the basic problem of linguistic analysis.

In view of the impact of Chomsky's recent work, it may be of some interest to illustrate the problem of discovery procedures in general. Consider the following set of letters:[4]

O	O
T	T
F	F
S	S
E	

The problem is to make a guess about the next letter in the series. It seems reasonable to suggest that not all guesses are equally well-founded. If forced to choose, most of us would say E. One might try to make explicit the bases for this guess and they would presumably include reference to previous experience with similar arrangements and past

[4] I am indebted to the mathematician Max Zorn who presented this example at a meeting of the Ethnolinguistic Seminar at Indiana University.

solutions, etc. Now it turns out that the 'right' answer is not E, but N, the letters being the first letters of the integers One Two Three Four Five Six Seven, allowing the first 0 to stand for Ought. Now, it may be possible to evolve a discovery procedure which will systematically yield a 'best guess', but this best guess need not be the 'right guess'. Given a corpus containing certain sequences, there are several positions one can take about the grammaticality of a particular unobserved sequence. The first is that it is of little consequence how one decides whether to posit its grammaticality; given two grammars, one of which generates the sequence and another which doesn't we require a method for evaluation. The other extreme is that implied in Spang-Hanssen's presentation, namely, that a statistical and functional analysis of just the corpus will indicate the likelihood that the absence of the sequence is accidental. But there is an intermediate position which seems to correspond a little more closely to what analysts in practice do, whereby the relevant data for formulating a hypothesis is not limited to analysis of the corpus under consideration, but includes information about similar problems and their solutions. The fact that just about every language analyzed so far has, say, a contrast between oral and nasal consonants can not be adduced as evidence to support the hypothesis that a language being analyzed has such a contrast, but it is relevant in deciding whether the hypothesis that there is such a contrast is better founded than the contrary hypothesis. Similarly, the presence of English *mad nod*, etc. cannot be adduced as evidence for demonstrating the grammaticalness of *nad*. Nor does the fact that other languages pattern in this way justify our concluding that English does too. But, this fact may enable us to say that positing the grammaticalness of nad is a better guess than the reverse. Whether it is the right guess is to be determined by additional procedures and criteria. In short, linguistics need not abandon completely the search for discovery procedures, if the requirement is merely that the results of such a procedure be a best guess. However, the implication that the only relevant data for such a procedure is the corpus under analysis seems unnecessarily stringent.

UNIVERSITY OF WASHINGTON

YANA DICTIONARY. By Edward Sapir and Morris Swadesh (Ed. by Mary R. Haas). University of California Publications in Linguistics, vol. 22, 1960. Pp. 267.

STANLEY NEWMAN

From Kroeber's Preface, the Editor's Note by Mary Haas, and the Introduction by Morris Swadesh, the reader can appreciate the long and circuitous history of cooperative endeavor that went into the making of this volume. In 1907, with his characteristic vigor in encouraging young talent and in sponsoring useful projects, Kroeber provided the opportunity for Sapir, then a promising linguist in his early twenties, to spend a year at Berkeley collecting Yana material. This language was chosen because of 'the alarming reduction in the number of its speakers' (p. v). The severe depression that began in 1907 made it impossible for Kroeber to find the funds for continuing Sapir's work. Yet, Sapir published a volume of Yana texts in 1910, and in the summer of 1915 he returned to Berkeley to teach and to work with Ishi, the last survivor of the Yahi dialect of Yana. Intermittently thereafter, Sapir continued the analysis of his field data, part of this task being the compilation of a dictionary. Occasionally he received some help: at Ottowa he had the services of a typist, and at the University of Chicago he was assisted for a time by Wendell C. Bennett, then a graduate student.

At Sapir's death in 1939 the dictionary notebooks were left in the hands of Swadesh, who reworked the raw notes into the form of dictionary entries. The manuscript was further revised and expanded, finally, under the editorial supervision of Mary Haas: all

sources were painstakingly searched for additional entries; an English-Yana section was compiled; and an index to the vocabulary in Sapir's The Position of Yana in the Hokan Stock was prepared and added to the dictionary as an appendix.

In the tradition of American Indian dictionaries this publication is a model of thoroughness and meticulous attention to detail. In his Introduction Swadesh provides a compact description of the language, with a phonemic interpretation. He also discusses some comparative problems, among which he gives the lexico-statistic results of comparing Yana and Chimariko, another Hokan language, showing a divergence of about 4000 years.

The Yana-English section includes lexical items culled from Sapir's unpublished material (e.g., field notes, lecture notes) as well as his published sources. The entries contain forms from all four dialects, though Southern Yana is only sparsely represented as compared to Yahi, Central Yana, and Northern Yana. Examples from the published Yana texts, accompanied by page and line references, comprise the major portion of the entries. Examples from other sources are used to supplement or clarify the textual data. Of inestimable value to the comparativist, the English-Yana section is a relatively short rearrangement of the entries.

This volume assumes a special and rare importance, for it provides Hokan comparative studies with a first-rate dictionary of a language that has long been extinct. Yana was rapidly approaching extinction even when Sapir began his field work with the language more than a half century ago. In spite of his difficulties in eliciting forms from the last surviving members of this or that dialect, his persistent labors, his phenomenal memory, his phonetic accuracy, and his sense of pattern resulted in a body of data which represented the most polished linguistic material of that time. Through the subsequent efforts of Swadesh and Mary Haas, this material is now published in a form which satisfies the best present-day standards of American Indian dictionary making.

UNIVERSITY OF NEW MEXICO

CROW TEXTS. Collected, translated, and edited by Robert H. Lowie. Berkeley and Los Angeles: University of California Press, 1960. Pp. xiii + 550.

CROW WORD LISTS: CROW-ENGLISH AND ENGLISH-CROW VOCABULARIES. By Robert H. Lowie. Berkeley and Los Angeles: University of California Press, 1960. Pp. x + 411.

WILLIAM BRIGHT

Robert Lowie's work on the Crow language is previously known from two publications in particular: A Crow Text with Grammatical Notes, UCPAAE 29.155–75 (1930), and The Crow Language, UCPAAE 39.1–142 (1941). These are now supplemented by the two volumes under review, assembled and arranged by his widow, Luella Cole Lowie. Both volumes are unusual, considering the limited nature of their audience, in having handsome hard covers. The volume of texts is further remarkable, as such publications go nowadays, for using a format of interlinear translation for all but the longest stories. Though this has obvious advantages for linguistic study, it means hard reading for anyone whose primary interest is in Crow ethnography or mythology.

Neither volume contains any explanation of the symbols in Lowie's notation of Crow; for this we must turn to his earlier publications. Lowie was, of course, not primarily a linguist, and his remarks on Crow phonology are often hard to interpret. For instance:

> Initial *m* and *n* are so weakly nasalized that they are constantly heard as *b* and *d*. In intervocalic position *m* (*b*) becomes *w*; *n* (*d*), *r*, an untrilled sound produced by incomplete closure in pronouncing a *d*. (The Crow Language, p. 3.)

Something like notational free variation is noted by Mrs. Lowie in several places:

> It will be noticed at once that my husband's recordings are not absolutely uniform. Within any given story he is consistent, but he varies a good deal from one tale to another . . . The numerous variations in the spelling of the same word are not due to careless typing or inadequate proofing . . . Most of these differences arise from actual variations either in the informant's pronunciation of words or in my husband's perception of them. (Preface to the Texts, p. viii.)

In short, it is impossible to tell whether any particular inconsistency in symbols represents variation on the allophonic, morphophonemic, idiolectal or dialectal levels, or whether it simply reflects inaccurate transcription. Mrs. Lowie does not help matters any with the following extraordinary statement:

> One peculiarity of the Crow language makes it difficult to find words in an alphabetical list. The Crow are not consistent about initial consonants; they appear to begin a word with whatever consonant will sound best after the last syllable of the preceding word or before the stem that is to follow. Thus, they say *birəxbá·ke*, *mirəxbá·ke*, or *wiraxbá·ke* quite interchangeably. If the desired word cannot be found under the first letter with which it happens to begin in any single usage in the text, one has to search under some other initial letter. (Preface to Word Lists, p. vii.)

A final confusion results from the fact that the distinction between i and iota, occasionally made by Lowie in his 1941 work, is obliterated in the new publications.

Amid this darkness, some light is cast by recent publications in this journal: Dorothea Kaschube's Examples of Tone in Crow, IJAL 20.34–36 (1954); Eric P. Hamp's Tone in Crow, IJAL 24.321–22 (1958); and G. H. Matthews' On Tone in Crow, IJAL 25.135–36 (1959). Although these papers are primarily concerned with prosodic features (to which Lowie gave little attention), Kaschube indicates that Lowie's b, m, w are, at any rate, separate phonemes; cf. piričky'á *pond* (Kaschube's /p/ = Lowie's b) with mirišš'à· *corpse*, x'à·pik *it's flat* with xaw'i·k *it's bad*. Her transcriptions also show, however, contrasts between lenis and fortis consonants (written by her as C vs. CC) which are missing in Lowie's work. Thus we find L(owie) bicí, K(aschube) piš'á *blanket* as against L icé, K 'išša *sack*; L xáxe, K x'áxa *striped* vs. L axé, K axx'à· *father*. It appears that a linguist such as Kaschube or Matthews, who have done independent work on Crow, would be capable of converting Lowie's transcription into a phonemic notation—but only up to a point; fresh field work would be necessary to settle many points.

The Crow Word Lists were apparently prepared from Lowie's posthumous card files, rather than from a finished manuscript. They are rather more than their title implies, since most entries contain abundant illustrative material. For the stem irí· *speak*, for instance, over thirty examples are given. Unfortunately, there is no particular correlation between examples given in the Crow-English section and those given in the English-Crow section. Hence Mrs. Lowie's advice:

> In using these materials the student is advised to look up words in both lists, so as to avail himself of all the illustrations. Thus, if he looks up *cé·* in the Crow-English list, he will find that it means to *say*. He should then look up *say* in the English-Crow list, where he will discover that *he·* has the same meaning. He then searches for *he·* and discovers more examples. By this procedure of cross-referencing he can gain many insights that would otherwise elude him. (p. vii.)

It may be added that this procedure can also give the student an overwhelming sense of frustration. Thus in the Crow-English section he finds bi *stone, rock*, with five examples. But under *stone* in the English-Crow section, he finds bíə, bía, bi, with five examples. Comparing these with the previous examples, he finds one pair that ALMOST agree: arú·ute íə bí·'kyàtu'tsɛruk' *arrow heads were of stone*, but í·ə bí·ⁱkyàtu'tsɛruk' *arrow heads were of stone, it is said*. Turning to the entry *rock*, he then finds bíə, with one example. This one also has a near counter-

part in the Crow-English section: bíəratxá-'tsɛn *where it was stony* vs. bíəretxa'tsɛ *where there were rocks*. And the entry *rock* also gives a new term bá·'pe, which can in its turn be traced elsewhere in the book. Educational as this detective work may be, the persons who issue a dictionary have their responsibility too. If material like this is worth publishing at all, it is worth a better job of editing.

The oddest thing of all about these volumes is just this: Why were they published in such style, and at such prices, without the editing to which they were entitled? In her preface to the Texts, Mrs. Lowie speaks of obtaining advice from a "professor of linguistics," and of having an "advanced graduate student in linguistics" help her in preparing the materials. The University of California at Berkeley has an excellent Linguistics Department, specializing in research on American Indian languages; but both Mrs. Lowie and the University Press seem to have been completely uninfluenced by any useful advice from linguists. The resulting deficiencies are not to be blamed on either of the Lowies, since they have never claimed to be linguists. The publishers, however, should realize that the mere presence of Robert Lowie's name on a manuscript does not guarantee it as a monument to his memory. Materials, such as these would, on the other hand, be most welcome if made generally available in the economical form of microfilm. For some years the University of Chicago Library has been issuing the Microfilm Collection of Manuscript Materials on Middle American Cultural Anthropology, including both linguistic and ethnographic works which, on various grounds, were not suitable for publication in other forms. It would be highly advantageous if materials now in the archives of the Bureau of American Ethnology, the University of California and other institutions could be issued in similar fashion.

UNIVERSITY OF CALIFORNIA,
LOS ANGELES

LA INFLUENCIA TAÍNA EN EL VOCABULARIO INGLÉS. Eliezer Narváez Santos. Ediciones Rvmbos, Barcelona, 1960. Pp. 172; n. p.

DOUGLAS TAYLOR

In this work, the author examines 78 words of presumed Taino ancestry and 36 others whose ancestry is disputed, said to have been incorporated in English at one time or another, though not all current today. It is not altogether clear why the English rather than the Spanish vocabulary was chosen for this study; since most Taino words found in the former obviously were borrowed from the latter, which has retained many more in general or in local use. But apparently it was the author's purpose to show that the influence of Taino has been not only greater, but also more widespread than is usually believed. There may have been, moreover, academic reasons for the choice; for this book is a revised version of a Master's thesis upheld at the Universidad de Puerto Rico.

After a short Introduction come six chapters entitled: El vocabulario inglés, El elemento taíno, Palabras taínas incorporadas al inglés, Modificaciones fonéticas de las palabras taínas, Cambios semánticos, Comentarios y rectificaciones; and these are followed by a Conclusion, an Appendix and a Bibliography. The first two chapters give, in very simplified outline, a history of the English vocabulary and an ethnography of the Taino; the others discuss the 'origin', the first recorded forms and spellings, and the changes of one sort and another undergone by these words, which are listed alphabetically and numbered in each of chapters III to VI. The references to various travel-books and dictionaries in which the several words have found place should prove useful to many; but to readers of this Journal it is the third and sixth chapters (the latter containing the words of disputed ancestry) that will be of greatest interest.

Some idea of these words' present currency may be gathered from the fact that only a quarter of them are listed in the Con-

cise Oxford Dictionary. Thus, of the 78 presumed to be Taino I find there: barbecue, batata (as well as potato), cacique, cannibal, canoe, Carib, cassava, cay, chigoe, guaiac(um), guava, hammock, hurricane, iguana, maize, mammee, manatee, mangrove (but not mangle, the form listed by Narváez), papaw, periagua or piragua, savanna(h), yucca; and of the 36 given as doubtfully Taino: cayman, guanaco, macaw (spp. of *Acrocomia*), manioc (but not manigot, as listed by N.), roucou, tafia, tobacco. I have no doubt that every one of the 114 words has appeared at some time in the writings of English or American travellers; and it is evident that all but a score have found their way into one or another dictionary of the English language (Webster's New International Dictionary seems to have been particularly hospitable in this respect); but it may fairly be questioned whether such words as aji, bejuco, caona, cucuy, guanabana (*soursop*), mecana, majagua, mani (*peanut*), turey, yaboa and most of the others ever became truly 'naturalized' in English.

It may also be doubted whether all the words here assumed to be Taino really had Taino models. That language's name for the *sweet-potato* was hage (cf. Lokono haliti and Goajiro haiši, which have the same meaning), as is clear from Chanca's statement: 'a este age llaman los de Caribi *nabi* y los indios *hage*'; and the more delicate variety known as batata appears to have been brought by the Spaniards themselves from Panama to Haiti and thence to Spain (v. American Anthropologist 59:704). The word piragua (also spelt pirahua) admittedly came from a Cariban language in which it designated a type of sailing-canoe; and its form immediately suggests a construction analogous to kanáua, but with the borrowed stem, Karina píra *sail* (Sp. vela). As for chigoe, of which Narváez, mistakenly believing it to be an English corruption of Taino or Spanish nigua, writes: 'Tal vez sea ésta la palabra que más cambios fonéticos haya sufrido en la lengua inglesa', either it or its model must have been borrowed from a Cariban language; cf., with the same meaning: Breton's Island-Carib (cica 1650) 'chíkê *chique*' and 'nichíguini *ma chique*', Wayana šikë, Karina siko, etc. A number of Arawakan languages have equivalents like: ititu (Adzaneni, Carutana & Catapolitani), isitu (Achagua & Piapoco), zitu (Mandauaca); but neither Lokono mibiki nor Taino nigua appears to have a cognate equivalent in any other language.

The word cayman has been often compared with Island-Carib akáiuma, Karina okoyumu, Akawai, okoima, etc.; but such Cariban forms usually refer to a mythical giant snake, to a river nymph, or to both, and never so far as I know to a creature of the crocodile family. However, several similar Arawakan words with the latter meaning are attested: Guinau and Yavitero kaimana, Baré and Piapoco tsamana and Achagua umana; so that there seems to be no good reason why cayman should not have had an inherited Taino word as model. And also colibri, though unattested for Taino, has every chance of being Arawakan; cf. Island-Carib (k)ulíbịų, Lokono kudibiu, Guinau kuripiu, Baniva ucipie, Piapoco kuipira, Ariti kutiala and Goajiro ucii, all meaning *bird*.

On the other hand Grisebach, in his Flora of the British West Indian Islands, gives 'mackaw bush' and 'mackaw tree' as the local English names of a Solanum and of two species of Acrocomia palms, all of which are provided with stout prickles or spines; and it seems probable that this name, which has also been recorded as macca, is the same as maká *thorn*, a word of African ancestry that is still current among the Negroes in Jamaica, Surinam and probably elsewhere in the West Indies. 'Roucou' and 'manioc' apparently came to us, via Fr. rocou and manioc, from urukú and mandióka of some Tupían language; and are unattested in the dialects of the Greater Antilles—unless Taino and Sp. yuca should also come ultimately from mandióka or its like.

Narváez cites Corominas, who questions the American ancestry of tabaco *tobacco* and

batea *trough*, and suggests that these words go back to Arabic tabbaq or tubbaq, a name for certain medicinal herbs, and battuja or batiya *barrel, cask, water-jar*. As I have tried to show elsewhere (American Anthropologist 54:278), the former word is susceptible, if it be Arawakan, of a fairly plausible analysis (a compound meaning *dip-eye* = *sleepy*); but since no other Arawakan language seems to call tobacco by a cognate term, the proposed Arab etymon is perhaps the more likely. As for batea, which, it is implied, was borrowed by Taino from Spanish, and by Spanish from Arab, I should like to compare it with a similar and undoubtedly hispano-arabic word, badea *water-melon*, which was borrowed by Island Carib as batía *water-melon*, while batáia of the same language means *trough (for grating manioc, etc.)*.

But even among the words which, in their early Spanish forms, were undoubtedly borrowed from Taino, some have an American distribution that extends beyond the Arawakan family; so, bixa *Bixa orellana* appears to be cognate with its equivalents in Island Carib (bíset), Machiguenga (pušote) and Campa (póϕóti); which in their turn look remarkably like Kechua and Spanish achiote, said to have been borrowed from Nahuatl aciotl. A few among these 'international' words may have reached other Amerindian languages through the intermediary of Spanish itself; but in most cases their meanings and various shapes make this quite unlikely. So, cf.:

Spanish & Taino	*Island Carib*	*Lokono & G(oajiro)*	*Karina*	*Tupi*
buhiti	búie	—	puyase	paye
cabuya	kábuia	—	kapu:ya	—
canoa	kanáua	G$^{?}$anuwa	kana:wa	—
cocuyo	kúkuiu	kókui	kúkui	—
guayaba	kuiábu	máliaba	koyaba	—
manatí	manátui	—	(cf. manati *breast*)	manati
maní	máli	—	—	mandubi
maraca(?)	maláka	maraka	maraka	maraka
papaya	abábai	papaya	mapaya	—
yagua	iauála	awara	yawara	yawari

Remarkable in the above is the apparent Tupían provenance of the Taino and Island-Carib names for the *peanut*, which have no similar equivalent in the intervening languages, Lokono and Karina. The identity of the Taino and Tupían (Pará and lower Amazon) names for the *manatee* is also inexplicable, unless we may suppose that the Karina themselves once called this mammal by their word for *mammae*. Narváez is mistaken in identifying, in his list of scientific names, Taino yagua with *Genipa americana* (which the Taino called 'xagua' and the Island Carib, homophonously, 'cháoua'), and correct in elsewhere calling it a palm. By this name (and its congeners), the Taino seem to have designated a species of *Oreodoxa*; but the Island Carib applied it to the *Acrocomia aculeata*, while in Lokono, Karina and, most likely, Tupinambá it refers to an *Astrocaryum*. The *Attalea cohune* is today so called by the Black Carib of Central America.

Narváez might have mentioned, but does not, Taino hicaco (Island-Carib hikáku) *Chrysobalanus icaco* whose specific name survives in Fr. icaque and in Eng. coco-plum. If he had chosen to be less parochial, and to include among his 'antillanismos' English and French words of Island-Carib provenance that are unattested in Taino, he could easily have doubled the length of his list. A few examples are: cali (*type of*) *landing-net*, canari *earthenware cooking pot*, hébichet *basketry sifter* (cf. Taino hibiz), mani (*kind of*) *resin*, muina (*type of*) *hut or shelter*, tomally (*kind of*) *sauce*, wayku =

ouaïcou *loincloth*. Or flora: arali, arouma, balisier, cachibou, calabouli, latanier, mabi, mibi, moubin, yattou; and fauna: anoli, araya, balaou, chique, cicérou, cirique, coulélé, coulirou, coulivicou, courapiaou, lamoussin, mabouléssou, manicou, maouali, ouattëribi, pépérou, sibouli, soumbé, titiri, tourourou, vévéra. Admittedly, few of these words or their referents are known to the average speaker of English or French in Europe; but they are better known to those who have to do with these things in the Lesser Antilles than are most of the Taino-English forms cited by Narváez. Some of them have suffered little—and others considerable—change in the process of borrowing; so, cali < IC káli, canari < IC kanáli and manicou < IC maníku, but lamoussin < IC alamuései, pépérou < IC ebépelu and vévéra < IC beléuera.

In order to evaluate the influence of language A upon the vocabulary of language B, it is necessary to delimit both terms. Narváez defines the Taino language as 'aquella que servía de medio de comunicación y punto de enlace espiritual a los pueblos de la Grandes Antillas'; yet he wittingly includes in his list some words, such as colibri and piragua, taken from other Arawakan and from non-Arawakan sources. These should be either eliminated, or else extended so as to give proportionate representation to all 'antillanismos' of Amerindian—or possibly Amerindian—provenance. As for the English vocabulary, it would seem useful to distinguish between general or common standard English and local oversea varieties such as West Indian, or Anglo-Indian with its dhobi *washerman*, syce *groom*, tiffin *lunch*, etc., many of which words have also found their way into dictionaries of the English language.

The book is both worth reading and readable, of agreeable format and well printed; but one's confidence in its reliability is inevitably somewhat shaken by such faulty references as those made to a paper (title not given) by William Henry Safford in the Proceedings of the 19th International Congress of Americanists, here called: 'Process of the 19th International Congress of America' (pp. 39, 46, 50, 55, 63, 64, 69, 75, 76), 'Process of the 19th International Congress' (pp. 42, 51, 53, 56), 'Process of the 19th Interamerican Congress' (pp. 45, 47, 148, 150, 151), 'Process of the 19th International American Congress' (pp. 61, 136) and, in the Bibliography (p. 172), 'Process of the 19th Century Interamerican Congress'. The borrowing by English of a considerable number of the Taino words listed here seems to be attested only by this paper, from which Narváez cites, apparently, at second hand. One may suspect that the fault lies with the inadequacy, for Americanists, of the Library of the University of Puerto Rico; for in the Introduction we are told: 'Todas estas obras citadas no fueron leídas por mí, sino que las recogí en diversos diccionarios y obras de carácter general que consulté. Hubiera sido humanamente imposible ir directamente a ellas por lo inasequible que están las mismas.'

DOMINICA, BRITISH WEST INDIES

ALGUMAS EQUAÇÕES FONÉTICAS EM ARAWAKAN. By Robert Shafer. Anthropos 54 (1959); pp. 542–62.

DOUGLAS TAYLOR

Following a short introduction and accompanied by brief footnotes, nineteen tables present the consonantal correspondences among numerous Arawakan languages by sets of presumably cognate equivalents grouped under each of thirteen reconstructed phonemes of the proto-language. The tables differ in scope, both as to the number of items exemplifying a particular correspondence and as to the number of languages cited in support of a particular reconstruction. Since there is not, of course, an entry opposite every item under every language listed, this fact can be shown only approximately as follows: *h (14 items, 36 languages), *k (11 i., 54 l.), *t (15 i., 27 l.), *p (14 i., 53 l.), *n (13 i., 58 l. in two tables), *m (9 i., 47 l.), *t′ (8 i., 10 l.), *ś (14

items, 20 l.), *ts (11 i., 21 l.), *d (5 i., 27 l.), *y (15 i., 26 l.), *w (11 i., 20 l.), *r (12 i., 33 l.). The last five tables show more limited or special correspondences (2 to 5 items, 2 to 7 languages).

The sub-grouping of Arawakan languages has long been hindered for want of any comparative studies; and though the present pioneering work should make, as its author modestly claims, 'barely a beginning' in comparative Arawakan, it admirably fulfils its main purpose, which is to stimulate further research in that field. C'est le premier pas qui coûte; and as Raymond Breton remarked three hundred years ago in a postscript to what probably is still the best dictionary of an Arawakan language (miscalled by him 'Caraïbe'): 'il n'y a rien si facile que d'adjoûter à l'invention des autres'.

In all, some sixty-four languages are represented in the present compilation; and their geographical spread extends from Amueixa in the west (75° W. I use Shafer's names and spellings of the languages) to Aruan in the east (49° 30′ W), and from Goahira in the north (12° N) to Tereno in the south (20° S). But less use than might have been expected seems to have been made of the records for some languages (Arawak, for example, appears only under *h, *k, *p, *n, *d and *r, with a total of 22 entries); and I fail to understand why Shafer lumps Dominican (which I call Island Carib) and Siboneye together with Lokono under the name of Arawak ('insular' or 'general'), however qualified (v. pp. 552, 560 and footnotes 31, 46).

Few if any of the records examined by Shafer could have undergone phonological analysis; and this is not attempted here, as the paper's title makes clear. What does seem to be attempted is a normalization of the various recorders' spellings. Shafer accuses the Germans of hearing all unaspirated stops and affricates as voiced; and says: 'Um acordo geral em anotações leva-me a acreditar que havia sòmente um tipo de oclusivas ou africadas, quer sonoras ou mudas, em qualquer língua arawakana—sonora em Baré, Guinau e Arawak, e surda em muitas outras.' Consequently, he adds, he has changed g and gh of German authors to k; but has usually written other sounds as in the original, although the reader 'deve muitas vezes substituir um *t* por um *d*, *p* por *b*, etc., ou considerar a distinçaõ como não sendo válida fonêmicamente.' Nevertheless, his reconstructed *t and *d cannot both belong to the same series (which is what I presume to be meant here by 'tipo'); and it is clear that correlations, whether of voice or of aspiration, are not unknown in some of the recorded languages: cf. Arawak (Lokono) titiyu *her daughter-in-law* but tidiyu *her breast*, ipirutu *it is big* but ibirutu *it is small*.

Some correspondences seem to be less, and others more complicated than Shafer's examples and transcription would lead one to suppose. So, under *h (arbitrarily employed, he says, to symbolize a phoneme of the proto-language represented by h, k, t, ź, s or zero of the modern languages), we find Maipure k (kiema *tapir*, kipa *stone*); and under *k we find Maipure k (-kápi *hand*) and, before i, tś (tśírri *moon*). But elsewhere (under *p) Shafer has written—doubtless through a slip—Maipure tśipa *stone*; and under *d, which is lost in this language, he has Maipure -atśini *ear*, a form that is presumably cognate with its Baré and Guinau equivalents, -dátini and -dáźini, both of which are listed under *h as examples of those languages' t and ź derived from this proto-phoneme. Now so far as I know, the only, or main record of Maipure is that made by an Italian, Gilij (Saggio di storia americana; Rome, 1780–84); and from it, I presume, C. H. de Goeje (The Arawak Language of Guiana; Amsterdam, 1928) cites Maipure chipa *stone*, chirri *nose* and chejapi *moon*—this last item listed by Shafer under *r as Maipure key-api *month*. It seems clear, therefore, that Shafer or one of his sources has here confused the values

conventionally attached to the diagraph ch in Italian and in Spanish (or English); and that Shafer's *h and *k fall together as Maipure k, before i as elsewhere.

On the other hand, *h > Arawak s-, attested here by only two examples (sebéru *load* and síba *stone*), is over-simplified. At least two more likely cognate equivalents of the items exemplifying the reflexes of *h might have been given for this language: Arawak kama *tapir* and halira- *white* (cf. Wirina kama *tapir* and Siusi hali- *white*, which are listed). Moreover, as I shall try to show in the next paragraph, Arawak (and Island-Carib) kúli *mouse* should take its place here beside such listed equivalents as Wapiśana kari (also, according to de Goeje, kori), Ipurina kérî, Kampa un-kiro, Piapoko íri, and hiri (omitting the accents) of seven other languages. So that we appear to have *h becoming Arawak s (before i or e), k, or h (conditions unknown). And similarly, *k seems to yield Arawak s (-síri *nose*, *point*) and k (-kabo *hand*, -kúti *foot*, káti *moon*) in the same positions; thus suggesting a merger of *h and *k in this language as well as in Maipure (and so also, it would seem, in Araiku, Ipurina, Kampa, Macigänga, Manao, Wirina and perhaps some others).

Though Shafer does not deal here with vocalic correspondences, it may be worth while noticing what seems to be a frequent correspondence of u or o in Arawak (if these sounds are distinctive in Lokono, they have not yet been distinguished in its record), Goahira, Island Carib and apparently also in Mehinaku and Araiku to i or e (and occasionally a) in most other Arawakan languages; an instance of which has been seen in the words for *mouse*. Other examples, all of whose glosses at least are among the items listed by Shafer, are: Arawak pukuléru and Island-Carib píkuli as against Yaulapiti pikiri, Piro péxiri, Kuśitíneri peśiri, Warekena píśi and some twelve more similar words from other languages, all glossed *aguti*; Arawak búhiri (Shafer has búśiri, which I have not found recorded for Lokono), Goahira posici and Island-Carib búliri as against Adyáneni, Karutana and Siusi pítiri, Tariana and Warekena pitsiri, Ipeka and Katapolitani pítseri, Yukuna pisiri and Mandawaka hiśiri, all glossed *bat*; Arawak úkabu or -kabo, Goahira ahappu and Island-Carib úkabu as against -kápi, -kábi, -káhi, etc, of more than thirty other languages, all meaning *hand*; Arawak -abnúa, Goahira himpu and Island-Carib -ábu as against inápi, yahí-zï, -ápi, -ábi, -áhi, etc. of some twenty-five other languages, all glossed as *bone*; Arawak bókia and Island-Carib bukúia as against pi or pi-, phi-, pfi-, xi-, hi-, bi-, etc. of more than thirty other languages, all meaning *thou*; Arawak ukúti, Island-Carib ukúti and Goahira -ʔuih as against -kíti, -kitśi, -śiti, -xitśi, etc. of ten other languages (to which one might add Maipure -kii and Manao -kiy), all meaning *foot*; Island-Carib húia as against Baré and Guinau híya, Yavitero žíya and íya, ítśa, ídza, ídya, ída, etc. of a dozen other languages, all meaning *rain*.

Two sets of forms are given for *eye*; under *h we find: -oíti (Baré; also recorded as -auíty and as -uiti), -auiźi (Guinau), -oki (Kampa) and oki- (Ipurina and Macigänga); and under *t: -iti (Baniva), -thi (Karutana and seven other languages), -ti (Tariana and three other languages). So far as concerns the second set (to which one might add Wainuma -tohi, Piapoko -tui and Mariate -doi), this repartition seems to be justified; for t of these languages appears under none other of the protophonemes reconstructed here. But Baré t appears also under *ś, as in uíto- *yellow* or kuáti *felis onça* (*jaguar?*), and under *t (though not after i); while *h and *k fall together in k of Kampa, Ipurina and Macigänga. So that Baré t and Guinau ź may in this case derive from one protophoneme, and k of the other languages from another. If we now bring into the comparison: Arawak akúsi, Wirina akuke, Island-Carib áku, Taino -ako and Goahira aʔu

(all meaning *eye*, but not given by Shafer), it would seem that Baré -oíti (< *okíti) is cognate with Arawak akúsi, and that *k has been lost in the former. Such loss appears to be evident in the case of Baré -isi (Kampa, Ipurina and Macigänga -kíti, Arawak -kúti) *foot*, since, according to these tables, *t becomes Baré s when preceded by i, and Baré t elsewhere. On the other hand, Arawak akúsi *eye* being almost certainly a compound, the absence of anything corresponding to its last syllable in Goahira, Island-Carib and Taino is without phonological significance.

Shafer reconstructs only five words (v. under *d): *path* *danibu or *dinabu, *yellow* *dewa, *forest* *dawa, *skin* *ida and *ear* *daheni; this last item from such attested forms as: Baré -dátini or -dáteni, Guinau -dážini or -dásini, Yavitero -tásine, Maipure -atśini (or rather, I think, -akini), Baniva -dáni, Atorai -tainé, Wapiśana -tain, Tariana -heni and Kapite ěéni, all meaning *ear*; parallels for all of whose correspondences are given. To these, one might add Manao -teki *ear* (cf. Manao -atêka and Arawak -adaka *urinate*, Manao ghüa or kija and Arawak síba *stone*). But if *h became Arawak s when *i or *e followed, as Shafer's other examples indicate, then Taino -ariken, Island-Carib aríkae, Arawak -adíke and Goahira ace?e, all meaning *ear*, point to *adihani rather than to *(a)daheni as the parent form (though there may of course have been two such forms, as in the case of the words for *path*).

Under *t, Arawak is not cited; and yet I can find three likely cognate equivalents in that language of items listed there: útu, -tu *daughter* (cf. such listed equivalents as Karutana -itu, and -itxu, -isu, etc. of nine other languages; and cf. also Island-Carib ítu *elder sister*), íte *miriti* (*Mauritia flexuosa*, a palm), which becomes itewi- in composition with -síri *nose*, *point* to form ítewisíri *young sprigs or leaves of miriti* (cf. Siusi íteui *miriti*, and similar listed equivalents in ten other languages), and ádukuti *grandfather*. This last Arawak word is presumably cognate with its listed Waura equivalent, -atukúzi; and probably contains a cognate of Guinau -átu *grandfather* and of six other similar equivalents listed in the same place. However, Guinau tenábo *path* shows t of this language as a reflex of *d, under which it is listed; and the likelihood that these forms for *grandfather* should be transferred from *t to *d is increased by the finding of such correspondences as Waura áta : Arawak ada *tree, wood*, Guinau mbuti : Arawak -bude *fish-hook* and Guinau mbetali : Arawak budali *cassava-griddle*.

The reflexes of *p, *m, *n and *r appear to offer little difficulty; but I am not altogether convinced of the necessity for reconstructing so many apical occlusives (*t′ and *ts, as well as *t and *d). Nor do I feel happy over the assignment of some items listed under *t′ and under *ś. Under *t′ we find, inter alia, Karutana -ítipi *tail*, áti *capsicum* and pítiri *bat*; with which compare, with the same meanings: Arawak íhi, háti and búhiri, Island-Carib íli, áti and búliri. Under *ś we find Yavitero káži and Baniva áśi *fire*, Yavitero -áži and Baniva-áśi *tooth*; to which it might seem proper to add Maipure kati ('catti') *fire* and ati *tooth*. Cognates of these words for *fire* are very likely contained in Manao kükati ('ghügaty'), Palikur tiketi and Arawak híkihi (recorded in 1595 by Dudley as 'hicket'), all meaning *fire*; but Manao ay, Palikur ai-buti, Arawak and Island-Carib ári, meaning *tooth*, either show reflexes of a proto-consonant other than that reflected in the words for *fire*, or else are not cognate with their equivalents in the other three languages.

Also under *ś, Yavitero žíya, Baré and Guinau híya, meaning *rain*, appear to be cognate with their Island-Carib equivalent, húia; while Yavitero yáži and Baniva yaśábua *night* may not improbably be cognate with their Island-Carib equivalent, ariábu. It matters little what symbol is

employed to represent a reconstructed phoneme; but before they can be rejected or accepted as correspondences of t, l, r or h of the other languages mentioned in this and the preceding paragraphs, sounds like Shafer's Yavitero ż and Baniva ś should have their values more clearly defined. It may therefore be useful to cite for the following seven glosses the Baniva forms (1) as recorded by Martius, (2) by Crevaux and (3), when given, by Montolieu (Governor, in 1877, of the Venezuelan province of Amazonas), followed, when given, by Shafer's transcription in parentheses: *fire* ársi, arsi, artchi, (áśi); *tooth* -asi, -arsi, -atchi, (-áśi); *night* yarapu, yarsapoué, iasapüa, (yaśábua); *sun* hamuri, amorci, atamorchi, (amóśi); *moon* -arhita, aucita, (aśída); *day* pépurhi, péporsiva; *fish-hook* putersi, putersi, putesi.

The disappearance, by way of aspiration, of one or more of the protophonemes has occurred in a number of languages; and seems to be under way in others. To cite only a few instances, *h has been lost in Baniva and in Mandawaka, and does not occur medially in many more languages; *k usually disappears in Baniva, and does so sometimes in Baré, the conditions for loss or conservation not being apparent; *d has been lost in Maipure, Mandawaka (with the sole apparent exception of ada *tree*) and in some fifteen other languages; it becomes h or zero in Tariana and Piapoko, h in Palikur and Yukuna, and has fallen together with *r in Island Carib and probably also in Taino (as r of the former, initial [d] ~ intervocalic [r] of the latter). Shafer indicates loss of *r in Baré, Guinau, Maipure and Wirina; and cites in support Baré -ya *red*, tibáu *toad*, kí *moon* and nú *neck*, Guinau -íya *blood*, śibau *toad* and hénau *woman*, Maipure keyapi *month* and -inù *neck*, Wirina inau *woman* and ke *nose*—as against apparent cognates like irai, hiparu, keri, -nuro, inaru and -kiri of other languages. However, the r or l (since only one liquid is reconstructed) of the following forms appears to be inherited from *r: Baré heinari, Guinau hanale and Wirina atinare, meaning *man*, Baré bariti and Guinau mbaliźi *ashes*, Guinau kulimali, Maipure kurita and Wirina okolle, meaning *tortoise*, Baré kulini and Maipure kurikini *black*, and (irrespective of which form should be correct) Shafer's Maipure tśírri *moon* = my Maipure -kiri *nose*. Finally, *p is represented by h or zero in Paresi, by h in Mandawaka and Yavitero, by x in Acagua and Saraveka; while in Arawak and in recent Vicentian and modern Central American Island Carib, p (not *p; these languages also having a b that has remained unchanged) of these languages changed to f during the 19th century.

In footnote 31 we find: '*ni > Arawak i, y'; which is probably a typographical error and in any case incorrect, as the Arawak forms for *water* listed in the table to which this footnote refers ('oni, wuni-', p. 552) attest. It should read: *inV > Arawak iV (i.e., *n is lost in this position); so, Arawak hiáru (cf. Island Carib hïáru) *woman* as against Karutana ínaru, Mandawaka inálu and similar equivalents with n in fifteen other languages; Arawak -ie (cf. Island-Carib -inínie > -iéie) *tongue* as against Karutana -ínene, Jabaana -neni, and some forty-three similar equivalents with n (usually twice) in other languages; Island-Carib -íuma (< *ínuma) *mouth* as against Karutana -numa, and thirty-nine similar equivalents with n in other languages.

In footnote 21, Shafer says: 'Arawakan *p > Yavitero h provàvelmente depois de contacto com língua espanhola'; and Morris Swadesh (in Actas del XXXIII Congreso Internacional de Americanistas; p. 129) merely infers that this change is comparatively recent. Actually, it must be very recent; for Yavitero f < *p is attested in a word-list recorded by Montolieu, published by a Caracas newspaper in 1877, and reproduced in volume VIII of the Bibliothèque Linguistique Américaine (Paris, 1882), pp. 281–84; where we find more than three

dozen entries showing this f, such as, for example: fi-saba *anda (vete)*, cafajoro *cachicamo grande*, fanisi *casa*, ia-fi *can ella*, fi-fi *contigo*, facha finuja *cuanto llegó*, forafi *cumbrera*, fi-ta-ié *dale*, fi-ta-né *dame*, fitanmi *hija*, enafemi *los hombres*, no dafidafi *hasta luego*. This Yavitero f, which has now become h, was doubtless a bilabial spirant, like one of the allophones of recent Dominican /p/, and unlike the f of modern Arawak and of modern Central American and recent Vicentian Island Carib, which are labiodental and therefore more stable.

The usefulness of Shafer's compilation as a basis and frame of reference from which to carry on further research will, I hope, appear in the comments and suggestions put forward above, which in no way belittle the author's achievement. For in any pioneering work of this scope, errors are to be expected, sought out one by one, and corrected.

DOMINICA, BRITISH WEST INDIES

THE GROUNDWORK OF ENGLISH INTONATION. Roger Kingdon. Longmans, Green, and Co., London, 1958, Pp. xxxi + 272.

THE GROUNDWORK OF ENGLISH STRESS. As above. Pp. xv + 224.

ENGLISH INTONATION PRACTICE. As above. Pp. xxii + 184.

ROBERT P. STOCKWELL

The number of analyses of English intonation contours proposed since the time of Henry Sweet[1] suggests that this area of phonetic analysis is one of very great interest, yet no one seems to be able to convince anyone that his proposals are adequate to account satisfactorily for the variety and complexity of the contours (phonetically) and of their functions (phonologically, grammatically, and/or semantically). Analyses of contours in terms of pitch phonemes (Pike), without terminal junctures or with them (Trager-Smith), have enjoyed a good deal of popularity in America, but they have never been valued highly abroad—nor have they escaped searching criticism in this country either (Bolinger). Both here and abroad the tonal analyses of Daniel Jones and his followers, highly respected for the excellence of their representation of phonetic detail, have failed to satisfy the requirements of structural description in that they do not consistently reveal what contours or segments of contours are minimally opposed with what other contours or segments; i.e., the SYSTEM in the contours does not emerge explicity from the typically Jonesian description. Sweet, and after him Palmer, Jassem, MacCarthy, and Kingdon, reduced contours to a small number of tones, level and moving, that constitute the minimal units of which contours are composed. It appears from the preface to The Groundwork of English Intonation that Jones approves of Kingdon's analysis, though the analysis clearly does not represent a convergence of British phoneticians and linguists generally. A somewhat different analysis of English intonation has been developed by Michael A. K. Halliday which when published may illustrate some of the important differences between the Firth and Jones traditions in British phonetics. Kingdon's work has been used as the basis for a study by Maria Schubiger.[2]

[1] See Jassem's brief survey of work by Jones, Klinghardt, Palmer, Schubiger, and Armstrong and Ward, in his Intonation of Conversational English (1952), pp. 9–11, or Pike's more detailed survey in his Intonation of American English (1946), pp. 3–11. Pike criticizes Kingdon's early work (a 1939 article in Le Maître phonétique). Many of his objections do not apply to the present books, though I think the most fundamental one still holds, that Kingdon "does not achieve an analysis of the underlying structure of the intonation system itself" (9). Besides the work surveyed by Jassem and Pike, and besides their own major contributions, the recent work of D. L. Bolinger should be noted (especially A Theory of Pitch Accent in English, Word 14, 109–49, Aug.–Dec. 1958).

[2] English Intonation: Its Form and Function (Tübingen, 1958). Reviewed in Language 36.544–8 (1960).

Kingdon's three books jointly constitute a really thorough study of English intonation; and, in spite of serious reservations I have about details and about the discursive, rather unstructured presentation, I think they constitute as good a study as we have had since the work of Pike and Jassem.

Kingdon's analysis is binary throughout: tones are level or kinetic (static vs. dynamic, fixed vs. gliding); the levels are high or low; all tones are normal or emphatic (high plus emphatic gives overhigh; low plus emphatic gives overlow); kinetic tones are rising or falling. Distributionally, tones are peripheral (non-nuclear; peripheral is my term in this context, not Kingdon's) or nuclear (at the center, or turn, of the contour: here only kinetic tones are permitted). The occurrence of a nuclear tone (necessarily kinetic) is the minimum intonational requirement of an English utterance. The peripheral tones precede or follow the nucleus. The precedent peripheral tones constitute the head (if stressed) and/or prehead (unstressed before the head). The post-nuclear tones constitute the tail. These distributional categories correspond with what A. A. Hill[3] has called the middle (nucleus), pre-middle (head), initial (prehead), and post-middle (tail) digits of an intonation contour. Hill's fifth position, the final digit, is incorporated by Kingdon in the glide symbolized at the nucleus (here agreeing with C. F. Hockett[4]).

The symbols that represent these contrasts are typographically simple, graphically suggestive, and versatile considerably beyond the limits of other pitchphoneme notations requiring so little apparatus (basically, three symbols),[5] and beyond the capacities of most that require far more apparatus. The symbols, against a background of **m**, are ˈ**m**, high level, ˌ**m** low level, ˈ**m** high rising, ˌ**m** low rising, ˈ**m** high falling, ˌ**m** low falling; plus combinations of the kinetic tones to produce ˇ**m** fall-rise, ˆ**m** rise-fall,ˈˆ**m** fall-rise-fall,ˈˇ**m** rise-fall-rise, all of these either high or low; and all stresses either normal or emphatic (ˈˈ**m**, ˌˌ**m**, ˈˈ**m**, ˌˌ**m**, ˈˈ**m**, ˌˌ**m**, ˈˇ**m**, ˈˆ**m**, etc.). Certain general rules govern relative levels of pitch between marked syllables: a sequence of high levels following the head automatically drops step-wise until the nucleus (*He bought* ˈ*lettuce,* ˈ*butter,* ˈ*milk, and* ˌ*bread*); the rise after a nuclear ˈ**m** or ˌ**m** is spread throughout the following tail; complex stresses ˇ**m**, ˆ**m**, etc., are divided in utterances containing stressable syllables after the nucleus (. . . if you're ˈˇsure, vs. . . . if you ˆthink ˌso); and a few others, similar in nature. These rules are not carefully stated, and an impeccable presentation of them is essential to maintaining the system. There are, further important differences between British and American in the shape of these rules which need to be carefully studied. Nonetheless it is intuitively true that such features as these in an intonation contour are regular, automatic, predictable, and obligatory (up to the point of free variation).

But what is much more important than simplicity, suggestibility, and versatility, this kind of symbolization (either in this form or, say, in Jassem's) does not imply a sharp dichotomy between pitch and stress. Bolinger's impressive and convincing experiments with pitch and stress accents leave little room for the popular notion that prominence is a direct function of loudness. Kingdon repeatedly indicates he believes "prominence is given to certain syllables in an utterance by using greater force in

[3] Introduction to Linguistic Structures (New York, 1958), Chap. 7.

[4] Manual of Phonology (Baltimore, 1955), pp. 46–47. Hockett simply marks the last two pitch phonemes at the "turn" of the contour, which is equivalent to marking a kinetic tone.

[5] Kingdon acknowledges that "some of the symbols employed in this system were first used by Henry Sweet. . . ." (xxx). But after careful study I can find no reference of any kind to the closely parallel and equally thorough work of Jassem. It is surely unlikely that Kingdon did not know of him.

pronouncing them";[6] there is a sense in which this is true (as compared with the assertion that stress appears to be extra loudness, which is either false or fails to be stated in a way that allows the construction of crucial experiments to test its validity). However, even this assertion about articulatory force, rather difficult to measure, can be circumvented by relying on two variables that are both easier to measure and intuitively easier to perceive: (1) pitch change, including the change in level that occurs, e.g., between pre-head and head (*I* ˈ*think that's* ˌ*right*, where the pitch change between *I* and *think* is a change of level) as well as the kinetic tones; and (2) vowel quality, assigning inherently greater prominence to the full vowels (i.e., peripheral on a vowel chart—in my dialect, the vowels of *beat, bit, bait, bet, bat bite, pot, bout, bought, quoit, but, boat, put, boot*), inherently lesser prominence to the reduced vowels (in my dialect, the vowels italicized in sof*a*, sof*as*; part*y*, establ*i*sh; visu*a*l, val*ue*, pill*ow*). Probably "force of articulation" varies substantially from one vowel quality to another in any case. The popular Trager and Smith four stress levels are comfortably accountable within the two variables of pitch and vowel quality in this way: Primary stress has regularly been described as occurring only at the nucleus; it follows that primary stress is equivalent to a nuclear tone. And since Kingdon finds only kinetic tones at the nucleus, we must ask whether the primary stress in Trager and Smith notation regularly occurs at the 'turn' of rising or falling contours. It is immediately obvious that this is true in all cases except patterns like √ 222|, √ 1ɪ1#, about which more below. The Trager-Smith convention of transcribing rising contours with a rising juncture after level pitch (√ 233‖) should not be allowed to confuse the issue—the primary stress at the center of these contours corresponds perfectly to a Kingdon kinetic tone of the rising variety. In contrast with primary stress (= nuclear kinetic tone), secondary stress is a level tone, 'word—stress' as opposed to 'sentence—' or 'phrase—stress'. It has long been uncomfortably difficult to pick out the nuclear stress in a phrase with several stressed syllables on the same pitch. The following transcriptions are in accord with Trager-Smith conventions:

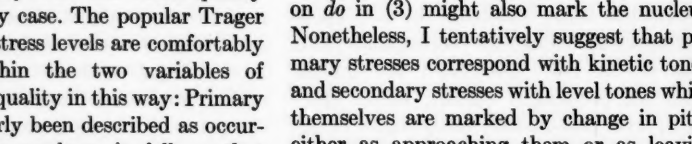
(1) /²bət ⁴hwát¹|¹dìdiy dûwət fôhr ə¹klák¹#/

(2) /²bət ⁴hwát¹|¹dìdiy dûwət ¹fóhr əklâk¹#/

(3) /²bət ⁴hwát¹|¹dìdiy ¹dúwit fôhr əklâk¹#/
"But WHAT did he do at four o'clock?"

I do not believe pair tests would reveal any difference between (1), (2), and (3). It appears to me that to mark a nucleus in such phrases only a shift in level or a kinetic tone will ordinarily do the job. It is at least a possibility that some device of timing, such as greater syllable length on *do* in (3) might also mark the nucleus. Nonetheless, I tentatively suggest that primary stresses correspond with kinetic tones, and secondary stresses with level tones which themselves are marked by change in pitch either as approaching them or as leaving them.[7] Thus in the above example, we can show the following elaborations:

(4) /²bət ⁴hwát¹|¹dìdiy ³dûwət fôhr ə²klák¹#/
But "what | did he 'do at 'four o'ˌclock.



(5) /²bət ⁴hwát¹|¹dìdiy ³dúwət fôhr əklâk¹#/
But "what | did he ˈdo at ˌfour

[6] English Intonation Practice, 1.

[7] These notions are derived from, but not equatable with, Bolinger's Accents A, B, and C.

o'·clock [8]
w
h d
but a
t did he o at four o'clock

(6) /[2]bət [4]hwát[1]|[1]dìdiy dúwət [3]fôhr ə[2]klák[1]#/
But "what | did he do at 'four o'ˌclock.
w
h four o'
but a $c_{l_{o}c_{k}}$
t did he do at

(7) /[2]bət [4]hwát[1]|[1]dìdiy dúwət [2]fôhr ə[3]klák[1]#/
But "what | did he do at 'four o'ˌclock.
w
h clo
but a four o' c
t did he do at k

In (4), (5), (6), and (7) there is no question of where the nuclear stress appears: in each case it is on the kinetic tone, even where that tone is lower-pitched than a preceding level tone as in (4) and (6).

If the two types of tones, kinetic and level, correspond with primary and secondary stress, as described above, then only vowel quality is left to differentiate between tertiary and weak stress. For my dialect, and I believe for very many American dialects, it is indeed possible to express a simple one-for-one correlation between vowel qualities and the lower levels of stress: full vowels, unmarked for tone, equate with Trager-Smith tertiarily-stressed syllables; reduced vowels equate with weak stresses ('unstressed syllables'). To maintain this distinction, all that is required is a set of symbols for reduced vowels that do not overlap with the symbols for full vowels.[9]

[8] Kingdon makes only "partial stresses" ·m in the tail, their level determined by the kinetic tone of the nucleus (here both low). On this detail there is perhaps room to quibble with him.

[9] I owe to William Gage and Charles Ferguson the suggestion that /i/, /iy/, and /iw/ be used for the reduced vowels. The notion that there is an 'unstressable' vowel (i.e. reduced) in English is of course very old in English phonetic tradition. A reasonably full explication of such an analysis of English vowels appears in the discussion of English phonology in A Linguistic Handbook for Spanish Teaching—Phonology, with J. Donald Bowen, forthcoming from the Center for Applied Linguistics. The discussion is derived, with certain significant changes in the system of full vowels, from Gage's work-paper on English phonology presented at the Ann Arbor kick-off conference for the CAL Contrastive Analyses being prepared under an NDEA contract. I have NOT used this transcription for the sentences cited in this review, in order to avoid confusion between it and the Trager-Smith conventions. The transcription is briefly outlined and exemplified in my review of Schubiger, loc. cit.

Kingdon's kinetic and level tones, then, combined with contrasting sets of vowel qualities, allow a transcription of suprasegmental features which appears to accomodate a number of the fundamental requirements of intonational analysis better than a stress-pitch-juncture system, especially in that it very satisfactorily meets most, if not all, of the searching objections to a stress-pitch dichotomy put forward most clearly by Bolinger. We can afford to look into Kingdon's tones even more closely, therefore, to see what other advantages they may have.

Since the tonal analysis has many fewer elements, it is to be expected that the differentiation of complex contours may be somewhat touchy. One of the classic Trager-Smith sets of contrasts is this one:

(9) /[2]hìy hæ̂z ə [4]vériy plêzint[2]|[2]pirsi̯n̂ɛ́l-itiy[1]#/

(10) /[2]hìy hæ̂z ə [4]vériy plêzint[2]|[2]pirsi̯n̂ɛ́l-itiy[2]#/

(11) /[2]hìy hæ̂z ə [4]vériy plêzint[2]|[2]pirsi̯n̂ɛ́l-itiy[2]‖/

(9) is a simple statement. (10) is an assertion of the only possible good feature that can be credited to him—everything else the speaker can say about him is negative. (11) is an assertion of one good quality

among many, or of a good quality with certain reservations. The set is absolutely minimal, the contrast between (9) and (10) residing in the last pitch phoneme, that between (10) and (11) in the final juncture. I can not discover in Kingdon's books a way to transcribe the contrast between (9) and (10), though that between (9) and (11) is clear enough. Phonetically, the contrast between (9) and (10) is entirely a matter of HOW FAR the final kinetic tone glides downward. I assume that in both instances Kingdon would write *perso˙nality*. The contrast between (9) and (11) is *perso˙nality* vs. *perso˅nality*. It therefore seems to me that Kingdon's notation requires the addition of two terminal junctures, defined quite differently from Trager-Smith terminals: /↓/ for a fall in ˙m or ˌm that extends to the bottom of the normal pitch range, /|/ for a fall (if the kinetic tone is falling) that is cut off before reaching the bottom. (9) and (10) would demonstrate a minimal contrast between them, whereas (11), having a rising kinetic tone, would be an instance of /|/ after a non-falling kinetic tone.

With the addition of these two junctures to Kingdon's set of symbols—preserving, it may be noted, the binary aspect of the entire system—we may then use them internally to mark phrase terminations and thus simultaneously correct the other glaring deficiency of his analysis, the absence of phrase terminations.

After extensive testing, I have found no contours that I can not transcribe as fully with these tools as with Trager-Smith-Pike kinds of tools. Certain contours that are serious problems in the latter systems are simple and clear in the former. For instance, the cases first cited in American journals by James Sledd, in which there is a rise-fall either after the nucleus or within it, are simply

(12) ˄*Certainly* or ˄ˌ*Certainly*

(13) ˄*Sure* or˄ *Sure*

(14) *It's* ˄*beautiful* or *It's* ˄ˌ*beautiful*

The cases where there is a series of downward steps, exceeding in number the four pitch levels of Trager-Smith-Pike-Wells, are statable by the kind of rule noted earlier. Kingdon has a special symbol for unstressed pre-heads that begin higher than normal:

(15) ⁻*The* ˌ*only* ˙*way* |

wa^{y}

the $_{o}$n^{ly}

and this same device applies to the cases of pre-nuclear high pitch on weak syllables:

(16) *If* ⁻*you* ˌ*want to* |

you

If to

want

There is still another point at which the Kingdon notation must compete with stress-pitch-juncture notations if it is to be used as successfully for theoretical work as it now can be for practical teaching (though since Kingdon had only the latter in mind, no direct criticism of his work is intended by these comments). I have made this point in the review of Schubiger[10] but at that time I did not see any way out of the difficulty (some notions about ways out have since occurred to me): we wish, some of us, to be able to abstract intonation contours as unit morphemes which have positions in sequences of morphemes, and which occur in constructions with other morphemes of the intonational class.[11] In order to do this, it must be possible to symbolize them in such a way as to permit the grammar to reassemble them by rule along with the segmental material. We must know, for instance, that if a morpheme √′˅ | (rise-fall-rise) is abstracted from

[10] Loc. cit.

[11] Some of the problems, as well as the promises of this kind of study, have been examined in my The Place of Intonation in a Generative Syntax of English, Language 36, 360–7 (July–Sept. 1960),

(17) *I ^think 'so* |
leaving

(18) *I think so* $+\sqrt{'}\vee\wedge$
then it goes back as (17) and not as

(19) *I think '\vso* |

which is an equally possible utterance. How to construct such a rule is the problem. With pitch phonemes the problem is relatively simple, because each phoneme in the sequence has a statable distribution with respect to the beginning of the phrase, the primary stress, and the end of the phrase.[12] By assigning the intonation morpheme a position immediately following the item that is to carry primary stress, the only choice is resolved and the rule handles the rest. With tones, the problem is substantially the same. The sequential position of the whole intonation morpheme is clearly fixed by co-occurrence with the item that is to carry the kinetic tone, so shat to get (17) rather than (19) from (18), we would start from (20),

(20) *I think* $+\sqrt{'}\vee$ | *so*

having built in some device to mark the phrase termination. In other words, the placement of the kinetic tone, of the pitch of the tail, and of the terminal juncture, is handleable by a device really identical with that employed for placing the nuclear digit, final pitch, and terminal juncture of the other analysis. But what of the head and pre-head? We certainly do not want indefinitely many intonation morphemes differentiated merely by the number of items carrying level tone (i.e. secondary stresses). Nor do we want any ambiguity about the placement on weak syllables of high or low tones, level or gliding, as in (15) and (16). I do not yet see a resolution of these and related problems in the specification of the head and pre-head, but it appears to me that a reasonable resolution will give us tools for the analysis of English intonation that have a sharper and more durable cutting edge than any we have had before.

My remarks have been confined to matters of general theoretical interest in the analysis of intonation. Kingdon's book on stress is a source of data rather than an analysis, containing as it does remarkably useful lists of stress patterns associated with various affixational and constituent types.[13]

The practice book is exactly what the title suggests, and a very good one for British English.

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[12] See Stockwell, The Place of Intonation . . ., loc. cit.

[13] A full study of the morphophonemic consequences of the regularities in these patterns is forthcoming from N. A. Chomsky and M. Halle. It is possible that one of the unresolved problems noted above (the secondary stresses in the head) may also be successfully dealt with by the rules they have formulated for placing all word-stresses and construct stresses (as in compounds) from syntactic information such as constituent class membership and affix choice.

A SHORTCUT TO THE ITALIAN LANGUAGE. By Waldo A. Rigal. New York: Philosophical Library, 1960. [xi], 286 pages.

ROBERT A. HALL JR.

In popular belief, a language consists of words; and if one can find a way to learn a great many words of a given language, one has learned most of the language. The book under review embodies this belief. The 'short-cut' which the author believes he has discovered, 'the system by which an untold number of English words are magically turned into Italian practically without effort' (43), is simply the presentation of numerous lists of words with cognate suffixes: e.g. -azione *-ation*. (Prefixes are not taken into account at all.) The user is given a very brief outline of pronunciation (3–7) and of a few grammatical points such as number, gender, the articles, the conjugation of a few irregular verbs, and numerals (8–40), interlarded with expressions of the 'useful words and phrases' type. The lists of cognate words (which occupy seventy percent of the book)

are divided into nouns and adjectives (43–171) and verbs (176–244); under the latter are given the conjugations of numerous verb types. A fourth part contains an alphabetical list of 'idioms and phrases' (246–58) and an English-Italian vocabulary (259–66); in a fifth (269–84) are given a series of conversations dealing with every-day situations. The material, we are told (ix), was prepared for emergency use by American officers before the 1943 invasions. Apparently it has undergone little or no revision since then, and hence has certain features which are out of date or reflect South Italian usage: e.g. the decidedly vulgar term cesso *toilet*; the curious form scrizione *sign* (probably a South Italianism for iscrizione *inscription*); or the use of voi *you* (2.pl.), following South Italian and Fascist usage, instead of the now universally accepted Lei *you* (polite 3.sg.).

This approach to language learning stands at the opposite extreme from one which is widespread among linguistic analysts, namely that structure is all-important and that vocabulary is of virtually no importance. Ultimately, this latter attitude is based on the belief that meaning is of no concern to the study or analysis of language. It is best exemplified in the series designed for teaching English to foreigners, based on the 'General Form' prepared in the early 1950's, and including such texts as the Inglés Hablado (New York: Holt, 1953) and the Inglese Parlato (Rome: Fulbright Commission, 1957 [multilithed]). Among the many shortcomings of the 'General Form' (cf. M. D. Clubb Jr., 'The "General Form" and English as a Foreign Language', Modern Language Journal 44.255–260 [1960]), one of the most outstanding is its extreme paucity of vocabulary —only ca. 750 words are introduced in the course of a hundred lessons. The lexical items included in the 'General Form' seem to follow no discernible criterion of even approximate frequency or usefulness; as a result, the texts based on the 'General Form' are, semantically, extremely thin and watery. Students working with these texts normally show marked disappointment at their slow progress in vocabulary, since these books do not even make use of obvious cognates, such as Rigal lists in the thousands. For the ordinary learner, no amount of detailed exposition of linguistic structure can compensate for lexical impoverishment and resultant inability to communicate.

Neither the Rigal approach (words without structure) nor that of the 'General Form' (structure without words) is adequate for effective language teaching. Any soundly-built language text must combine thorough comparison of linguistic structures with the learning of as many lexical items as possible. The gradation and rate of presentation will of course vary, for both structure and vocabulary, in accordance with the degree of similarity between the learner's language and the target language. If these factors are taken into account, basically successful and usable texts will result (e.g. most recently, D. Bolinger et al., Modern Spanish [New York: Harcourt Brace, 1960]). If they are neglected, the resultant texts (such as the book under review or the series based on the 'General Form') will inevitably be useless for effective learning of structure or vocabulary, since neither can be learned without the other.

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A PROBLEM IN RELATIONSHIP

DOUGLAS TAYLOR

In a recent note in this journal (On consonantal correspondences in three Arawakan languages), I cited Island Carib ĺli : Lokono ĥi : Goajiro -sih *tail* and I.C. búliri : Lok. búhiri : Goa. posiči *bat* as examples of a rare but apparently real correspondence of l : h : s among these languages. Further comparison of these forms' equivalents and of the words for *aguti* and *rat* or *mouse* in some other languages of the same stock suggests that there may be, in a number of them, a morphological relationship between two or

	tail	*bat*	*aguti*	*rat* or *mouse*
I.C.	ſli	búliri	píkuli	kúli(i)
Lok.	ſhi	búhiri	pukuléro	kúli(hi)
Pal.	-ribu	—	bukutro	—
Wap.	—	—	—	kori, kari
Ban.	piši	—	pikurua	—
Gui.	-ibi	mbesaue	—	kusitiu
Baré	ihibi	—	—	—
Goa.	-sih	posiči	—	—
Ipu.	išipi	šiepiri	—	kérî
Kun.	—	—	péhyöri	—
Piro	—	—	péhiri	kuči
Kam.	—	pſhiri	—	ónkſró
Kuš.	-nsii	—	péširi	—
Wau.	—	—	peköorži	—
Yau.	ikipina	—	pikiri	—
Moxo	hiki	bite	—	—
Meh.	inepiu	—	pekirži	—
Bau.	—	witere	piri	—
Ari.	enihu	Sar. maxiece	—	—
Pia.	—	—	pſži	ſri
War.	-sſpi	picſri	pſsi	—
Yuk.	—	pſsiri	pisſ	hſri
Adz.	—	pſtiri	pſci	hſri
Mand.	—	hſžiri	hſži	ſri
Kar. & Siu.	-ſtipi	pſtiri	pſči	hſri
Kat. & Tar.	-ſcipi	pſciri	pſci	hſri

more of the forms designating these four referents.

The problem is of both phonological and etymological interest; for while some of the apparent correspondences are common (such as, before i or e: Meh. k : Wau. : k : Ipu. k : Kuš. š : Kun. š : Piro h : Lok. s), others (such as those mentioned in the preceding paragraph) are rare and in need of elucidation. And while there would be nothing surprising about a relationship between the words for *rat* or *mouse* with either those for *aguti* (a large rodent) or those for *bat* (cf. Fr. chauve-souris, It. rata-pignata, Port. morcego, Ger. Fledermaus, etc.) or with both, a relationship between either of the latter and a form meaning *tail* is inexplicable in view of the fact that agutis and most bats are practically tailless.

So far as Island Carib and Lokono are concerned, the words for *bat* and *aguti* appear to be quite unrelated; although the latter might well have contained a form meaning *big* (cf. Lokono ipi-li/ru- *big*) in composition with that meaning *rat* (Lokono) or *mouse* (Island Carib). But in the languages of the Rio Negro group (those in the table from Yukuna to the end), the words for *bat* and *aguti* appear to be closely related (assuming t and c of the Adzaneni, Karutana and Siuci forms to be free variants in this position, as might seem justified by the identity of their correspondents in Yukuna, Mandawaka, Katapolitani and Tariana); the former apparently containing the latter, together with another morpheme which may well be the same as that seen in the words for *rat* or *mouse*; while the forms for *tail* and those for *aguti* seem to contain the same two morphemes in reverse order (cf. also their Yaulapiti equivalents). Moreover, Palikur -ribu *tail* suggests that its Island Carib and Lokono equivalents may be abbreviations of earlier *ilibu and *ihibu respectively; while the Ipurina word for *bat* apparently contains the same two morphemes as constitute its word for *tail*—without change in their order.

Of course, not all equivalent forms shown here are cognate; for it is obvious, since b of Lokono corresponds to b of Baré, that Lokono ihi and Baré ihibi *tail* can be only partially cognate; and that the former is unrelated to Guinau -ibi *tail* unless the h of the Lokono and Baré forms here reflect a phoneme of the proto-language that has been lost in Guinau. Nor is it admissible to accept as cognate forms (like Baniva piši and Ipurina išipi or Warekena -sipi, all meaning *tail*) that seem to contain cognate morphemes in reverse order; since such reversal may in some cases bring about a change of referent (cf. Warekena písi *aguti*). On the other hand, non-equivalents like Kampa píhiri *bat* and Piro péhiri (also Kuniba péhyöri, Kušitineri peširi and Yaulapiti pikiri) *aguti* may very possibly be cognate.

The Island Carib forms are, I think, phonemic; while the Lokono and Goajiro forms are probably so. Forms cited from other languages must be regarded as broadly phonetic, with c = [ts] and č = [tš]. The names of most languages have been abbreviated to their first three letters. Those not mentioned in the text (where the names are written in full) are: Ariti (Paressí), Bauré, Mehinaku, Piapoko, Saraveka, Wapišana and Waura.

DOMINICA, BRITISH WEST INDIES